

**AROUND THE WORLD
IN 50 DAYS**

"Inside Dope"

By GEORGE F.
TAUBENECK



Story of the Week
**Home Is Where
The Heart Is**
**Let's Make It the
50th State**
**Beauty Queens of the
World**
**People Are Wonderful
Everywhere**
**Is a Suicidal War
Inevitable?**
How Can We Prevent It?
**Let's Trade More
Common Denominators**

Story of the Week

To an official of the Smithsonian Institution an eager young man presented a swatch of silk.

"This," he announced, "is a piece of Martha Washington's wedding dress. Would you care to buy it?"

Contemptuously suspicious, Mr. Official summoned the Smithsonian curator. The latter, surprisingly, pronounced the swatch genuine.

"However," he added, "we already have the bodice of that wedding dress here, so your little piece would hold little interest for our customers."

Two weeks later the lad came back with a slab of wood which, he claimed, had been part of Noah's Ark. Again the curator was called, and he admitted that indeed it was an authentic whack from Noah's Ark.

"It's of minor importance, though," he deprecated. "Noah's anchor, as a matter of fact, lies below in one of our storerooms. Hardly anybody cares about it."

Within a month the young man returned. This time a smug, cocky expression lit up his phiz.

"I have here," he produced, "one of King Tut's ears. And . . . before you send for that lousy curator again" . . . (he reached into a pocket). . . .

"Here's King Tutankhamen's other ear!"

**Home Is Where
The Heart Is**

Twenty-one years ago this writer took a leisurely trip around the world, and visited subscribers in their offices and homes everywhere. That long-ago circumnavigation required more than seven months.

Recently "Dope" completed another world-rounder which took a bit less than seven weeks—thanks largely to speedy modern air travel (plus a rushed schedule).

Indubitably that initial trip
(Continued on Page 24, Col. 1)

World Wide Cooling Market Awaits U.S. Wooing

EVERYWHERE, U.N.—Most significant fact underlying all the international turmoil and upheavals going on today is this: *formerly backward people want to raise their standards.*

They want refrigerators and automobiles and air conditioning and other good things of life which Americans have enjoyed for so long. And they seek inde-

pendence—which we also have enjoyed.

True, in their emotional coo-coon-breaking, mobs may spit on the American flag and scream "Yankees Go Home." Symbolically, though, the spit-and-scream act is like a teen-ager (who secretly admires his parents) trying to assert himself as an individual, with only imma-

ture tools at his command.

All this ferment, to the world trader, really has its bright side. Prior to 1950 his biggest problem was apathy and centuries-old traditions. New products for better living were greeted (?) with a "so what?"

In cultured, highly civilized Europe, for example, there weren't even iceboxes in homes

when our salesman arrived in the 1930's. Why should Europeans be interested in new-fangled electric refrigerators—let alone commercial refrigeration? They'd done without them for centuries, hadn't they?

In Asia the peasants still plowed with forked sticks, just as their ancestors had done
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**Car Cooling Sales
Grow Despite Auto
Output Decline**

DALLAS — Auto air conditioning sales are apparently continuing to mushroom this year, despite the sharp drop-off in automobile sales and the slowdown in the economy generally.

"Sales markets now encircle the globe, with volume increasing by leaps and bounds in as many as 25 foreign countries," reports H. Dale Gordon, president of the Automotive Air Conditioning Manufacturers Association.

In the United States, he indicated, sales are no longer restricted to the Deep South, but are reaching as far north as Alaska and points in between.

The *New York Times* estimates that dollar volume of auto cooling sales may reach \$150 million this year, a 50%
(Concluded on Page 59, Col. 3)

**1960 Western Show
Dates Announced;
Other Shows In '59**

LOS ANGELES — The next Western Air Conditioning, Heating, Ventilating, and Refrigeration Exhibit and Conference will be held April 27 through April 30, 1960, in Los Angeles, it was announced recently by the Western Air Conditioning Industries Association, sponsor of the event.

At the close of the Western Exhibit this past May, it was announced that in the future, the event would be held once every two years.

Two major industry shows will be held in 1959. The International Heating & Air Conditioning Exposition sponsored by the American Society of Heating & Air-Conditioning Engineers, will be held Jan. 26-30 in Philadelphia. The Exposition of the Air Conditioning and Refrigeration Industry, sponsored by the Air-Conditioning & Refrigeration Institute, will be held Nov. 2-5 at Atlantic City, N. J.

**Smarter World Trade Can Be Key
To Future American Prosperity**

(Conscience of the Industry Editorial by George F. Taubeneck)

SPUTNIK knocked America off its perch of smug complacency. We The People, who had assumed we were world leaders in almost everything, suddenly discovered that even the presumed barbaric Russians could outdo us in terms of the most tremendously exciting scientific advancement of all recent time.

Russia's Sputnik ushered in the Age of Space Exploration—and captured the imagination of people everywhere, rightfully. Today we confront future excitement comparable to that of the age when Columbus, Vasco de Gama,

(Concluded on page 28)

BEHIND PAGE ONE . . .

West Germany's Recovery

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**Kalamazoo Starts
'Shield' Program**

By C. Dale Mericle

KALAMAZOO, Mich. — First Silver Shield program aimed at promoting the sale of better heating and air conditioning systems was officially launched here July 25 at a dinner attended by local officials, bankers, builders, contractors, and industry figures.

Devised by the National Warm Air Heating & Air Conditioning Association, the Silver Shield program will be conducted locally by the Kalamazoo

Complete details of the Kalamazoo Silver Shield program, including photos taken at the "kick-off" dinner, will appear in a following issue of the NEWS.

Indoor Comfort Bureau, Inc., which was organized for this purpose by 12 contractors.

The local group formally re-
(Concluded on Page 59, Col. 3)

**Kansas Dairy Act
Unconstitutional,
Court Rules**

WASHINGTON, D. C. — Kansas District Court Judge Beryl R. Johnson has ruled that the Kansas Dairy Industries Practices Act of 1957 is unconstitutional, it was reported by the Air-Conditioning & Refrigeration Institute.

Enactment last year of the Act "created a furor in industry circles, since it laid down rules covering milk products prices and issuance of equipment to ice cream dealers," the ARI noted.

"Under its provisions, ice cream manufacturers were forbidden to provide their accounts with ice cream cabinets and other equipment as had been the practice of the wholesale ice cream business."

The Kansas Act included the following sections:

"The practices being conducted by many dairy processors,
(Concluded on Page 59, Col. 1)

**Contract Devised by Ft. Worth Group
Spells Out Liabilities, Terms of Payment**

FORT WORTH, Texas—Discovery that several of its members were caught in legal technicalities over contracts has prompted the Fort Worth Air Conditioning Association to develop a contract form that all members can use.

"During the investigation of the legal aspects of the contract, many of the contractors received a liberal education as

to the very thin ice they have been operating on," points out Col. Edwin D. McCoy, executive secretary.

Preliminary investigations also turned up the fact that contractors in Fort Worth use anything from a scrap of paper, a verbal contract, or a letter on up to a formalized contract for the sale of heating and air con-
(Concluded on Page 54, Col. 1)

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COPPER TUBING**Made by
Copper Tube SPECIALISTS**SECOND to NONE**for Refrigeration &
Air Conditioning Equipment**READING TUBE CORPORATION**EMPIRE STATE BUILDING NEW YORK 1, N. Y.
WORKS: READING, PA.**Yearly Cooling, Heating, Ventilating
And Refrigeration Sales In Europe
Estimated at \$500 Million by Carrier**

NEW YORK CITY—"We estimate air conditioning, refrigeration, heating, and ventilating sales in the European market at the user level is approximately \$500 million a year," states John M. Rachal, vice president of Carrier Corp. and manager of its International Div.

Sales of Carrier Corp. in the international market are ahead of last year and offer prospect of continuing rapid growth, Rachal said. The corporation's sales throughout the world have more than doubled during the past five-year period, in which American exports generally expanded by approximately 50%.

he further pointed out.

Operating in more than 100 countries, the company has developed a world-wide organization of subsidiaries, affiliates, licensees, and distributors, he declared.

"Industrial growth everywhere in the world is of benefit to the air conditioning and refrigeration industry," Rachal said. "Where there is industrial growth, there is expansion of purchasing power, with corresponding demand for air conditioning."

"During the many years in which Carrier has been active in the introduction of air conditioning in world markets, it has been our experience that purchasing power is the primary factor, rather than climate, in the sales potential."

"For example, only 10 to 15% of Carrier International Div. sales are developed in strictly tropical zones. On the other hand, the more important markets have been in the temperature zones where greater industrialization exists."

He further cited the extensive market offered by worldwide ship construction or renovation. Refrigerating equipment is essential on all vessels today, he pointed out, and air conditioning is standard on passenger lines, cargo vessels, and tankers. Great Britain, Japan, West Germany, Holland, Italy, France, and Scandinavian countries are all major factors in merchant marine construction abroad.

During a recent European trip, Rachal found the air conditioning industry there enjoying a rate of growth much greater than had generally been realized here. He termed this a fact "to be welcomed" since as the local industry grows, the market will further expand to the benefit of all.

"If America's \$400 billion economy supports a \$3.2 billion air conditioning industry in the U.S.A., we can certainly foresee a tremendous market abroad as the economies of the various countries expand and prosper," he concludes.

**Brazilian Publisher
Sees Refrigeration
Industry In Infancy**

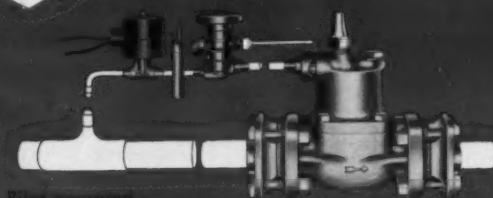
DETROIT—Although the potential market is enormous, the air conditioning and refrigeration industry in Brazil is still in its infancy, declares Fabio Luiz G. de Tullio.

Tullio is publisher and editor-in-chief of the new Brazilian trade magazine *Refrigeracao*. He believes that his is the first refrigeration trade magazine to be published in Portuguese.

At present, he said, there are only four room air conditioner manufacturers in Brazil. None of them are operating on an assembly line basis. They produce units in batches as they are needed. Production is small, he believes, and no figures are available.

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Recession Not Being Felt Abroad, Yet, But Slight Setback May Be Experienced In '59

MASPEETH, N. Y.—The economic recession that has left its mark on the air conditioning industry in the United States has not yet been felt in the foreign market, according to Harlan Grosshans, export manager, Fedders-Quigan Corp.

Grosshans predicted, however, that the business slump here may shortly dig into the available dollars abroad. As far as the air conditioning industry is concerned, a slight sales setback may be experienced in 1959, he thinks.

"The trouble with the export market," said the Fedders executive, "is that some markets are here today and gone tomorrow. We were doing fine in the Mid-

dle East nations of Saudi Arabia, Lebanon, and Iraq until the current blow-up there. Next week, a situation is liable to develop somewhere else and what was anticipated for good air conditioner movement turns sour.

"A few months ago it would have been easy to estimate that the industry export sales for 1958 would top the 95,000 units shipped in 1957," said Grosshans. "Now, I'm not so sure."

The South American market was cited as one area where the industry is headed for a rocky road unless loans and added purchases from the United States bolster dollar reserves. In the meantime, Grosshans

noted, shipments into Latin America have been holding up well.

He noted that at the end of the first quarter, the latest period for which industry figures are available, exports were 18% above the first quarter of 1957. It is estimated that the first half shipments will also be higher than last year.

As for Fedders, Grosshans reported that export sales for the firm's 10-month fiscal period, ended June 30, were 19% greater than for the same period of 1957. "As a matter of fact, we shipped more units export in 10 months this year than we did for all 12 months last year."

The export manager reported

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Air Conditioning and Refrigeration News
450 W. Fort Street Detroit 26, Michigan

that heat pump air conditioners were gaining rapidly in the foreign market. One reason was that central heating was practically unknown in many foreign nations and consumers

relied on individual unit heating equipment.

Grosshans predicted that despite a short setback, the industry will probably hit sales of 200,000 units by 1960, about double 1957. By 1965 that figure should be increased to 500,000 units. This would include actual export shipments as well as units manufactured domestically via license agreements.

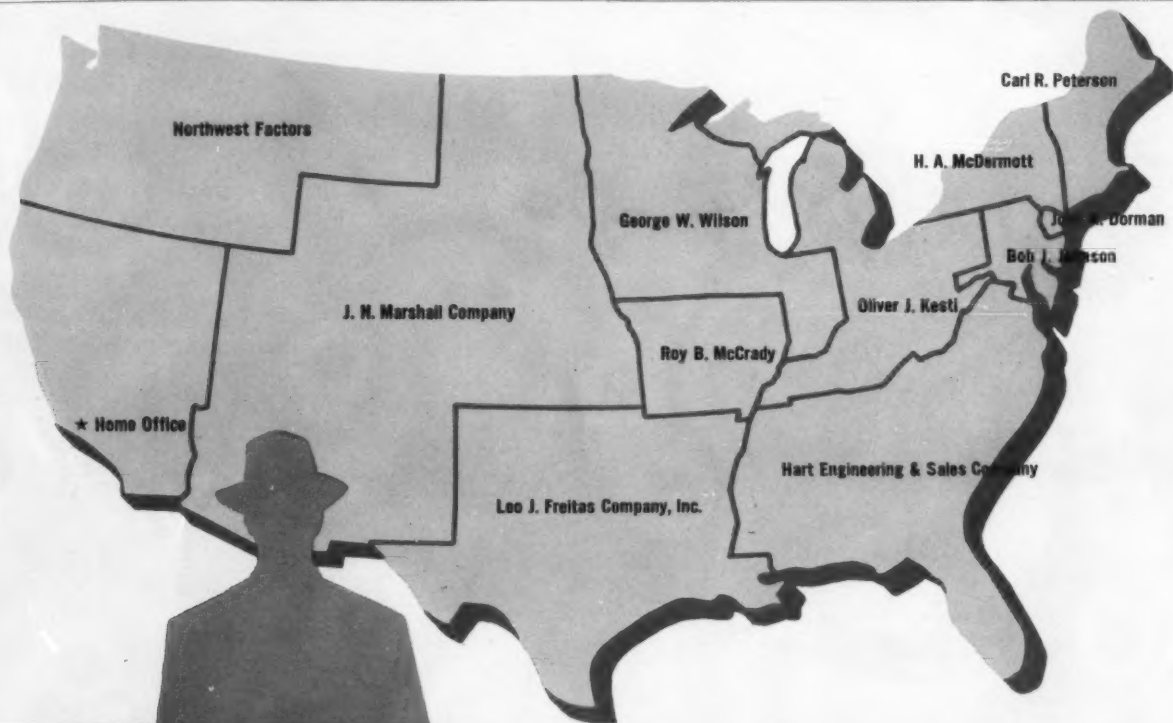
"The restrictions of duties, the inconsistency of available dollars, and the need for specific mechanical and electrical characteristics will force more manufacturers to seek foreign licenses," he said. "It will be the only practical way to get your product sold in certain foreign markets."

Fedders already has a licensing agreement with a company in India, Lloyd Electric Engineering, New Delhi. This firm has been manufacturing Fedders air conditioners since 1956. Distribution is through wholesalers and retailers in India, Ceylon, and Pakistan.

Fedders is also negotiating for licensing arrangements with companies in South America and Europe.

Canada is the firm's largest export market, as it is for the industry in general. Brazil, Hong Kong, India, and Cuba are other large Fedders markets.

As yet, Fedders does not have distribution in Alaska although Grosshans has been in contact with certain companies there. No particular thought was given to this market until Fedders received a number of inquiries from Alaskans in response to a *Reader's Digest* advertisement on heat pump air conditioners.



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*Tradename and trademark of AP&CC

†Isotron is a Pennsalt trademark

TRONA For further information write
American Potash & Chemical Corporation

3000 West Sixth Street, Los Angeles 54, Calif. 99 Park Avenue, New York 16, New York

Export Office: 99 Park Avenue, New York 16, New York

American Motors To Move Compressor Output to Grand Rapids

DETROIT—American Motors Corp. announced that in August the company will begin transfer of refrigeration compressor manufacture from its Detroit plant to the main Kelvinator plant in Grand Rapids, Mich.

B. A. Chapman, executive vice president and general manager of the Kelvinator Div., said the transfer will be completed gradually by the end of this year.

Chapman said the transfer is being made to concentrate refrigeration production operations in Grand Rapids, which already accounts for the major share of the company's refrigerator manufacture, as well as all home freezer and ice cream cabinet production.



Chart your progress for bigger air conditioning sales from now on with GENERAL ELECTRIC BLUEPRINT for LEADERSHIP

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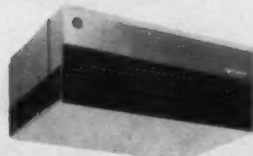
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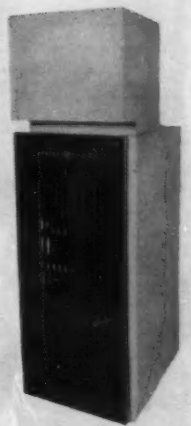
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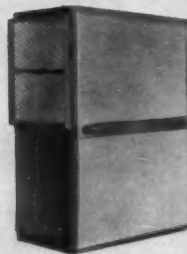
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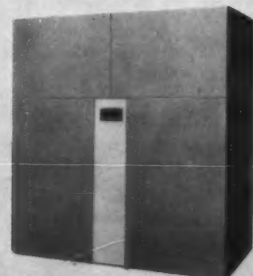
Year-Round Air Conditioners



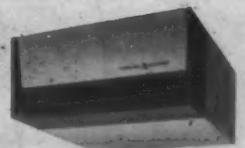
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ACD 14

West Germany's Economic Recovery Since War Amazing; Home Refrigerator Consumption To Pass 800,000 In '58

By George F. Taubeneck

RUSSELSHEIM, West Germany—What this free half of Germany has done in the last dozen years is amazing.

From a flattened, defeated, rubble, truncated country without money and seemingly without hope, it has rebounded to heights of prosperity and productivity unmatched in Europe, and unparalleled almost anywhere in terms of upward zooming sales curves.

Furthermore, its currency may be the soundest in the World today. Certainly its gold and foreign exchange situation leaves little to be desired. Prime reasons:

1. Implemented belief in free enterprise and the free market place on the part of the government.

2. Ingrained belief in hard work on the part of "labor." No goofing off here, no strikes, no desire to get higher wages for less work.

3. Native talent for science and mechanics, coupled with a natural bent and desire for world trade. These people know how to (a) produce, (b) export, (c) sell.

And, after two disastrous wars and two crushing defeats, they seem to have learned their lesson about the folly of mili-

tarism. German students today are leading exponents of pacifism, as are German businessmen.

They don't want to conquer the world; they just want to trade with it.

Their living standards today are among the world's highest, they're living higher off the hawg year by year, and the German people want nothing to interfere with this peaceful bountiful, progressive process.

Take a look at this: In 1957 some 600,000 domestic refrigerators were made and sold in West Germany (this figure does not include the amount exported).

In 1958, according to Barton Brown of the Adam Opel subsidiary of General Motors, West German consumption of home refrigerators will surpass 800,000. That's more than double England's consumption.

Moreover, frozen foods are coming into their own in West Germany. Which means that a rapid growth in sales of home freezers, low temperature commercial cabinets, and self-service cases can be predicted. Tyler Refrigerator Corp. has a new plant here.

Incidentally, G-M's Opel plant, under the direction of Karl Schindler, builds a line of Frigidaire household refrigera-

tors (6 models between 3 and 8 cu. ft.) as well as the following items:

Dehumidifiers, ice makers, commercial rotary condensing units of 1/4 and 1/2 hp., commercial open-type reciprocating condensing units from 1/4 to 4 hp. (air cooled) and from 3/4 to 4 hp. (water cooled), together with gravity and forced air evaporators, plus thermostatic controls, pressure switches, and refrigerant and water valves.

German suppliers build to Frigidaire specifications such additional products as reach-in and display fixtures, three models of household food freezers (chest type) and prefabricated shelves for freezer locker plants.

AUTO PLANTS CONVERT TO REFRIGERATOR OUTPUT DURING PART OF YEAR

Interestingly, these Frigidaire household and commercial refrigerators are manufactured in the same plants which turn out G-M's Opel automobiles. Not simultaneously, either; but intermittently!

Cars are manufactured therein for several months. Then the production lines are shut down, converted, and out roll the refrigeration units and components. Efficiently done, too. Frigidaire sales manager in Germany is Ulrich von Kremski.

COOL CLIMATE DULLS INTEREST IN AIR CONDITIONING

Cool climatic conditions have handicapped interest in air conditioning here—as elsewhere in Europe. Nevertheless, the air conditioning of stores, factories, theaters, auditoriums, cinema houses, and public buildings is a growing business. Carrier is in the picture, as usual.

Among other AIR CONDITIONING & REFRIGERATION NEWS subscribers in West Germany:

Christof Fischer imports Alco valves and Anslu refrigerants, along with a variety of components from Danfoss (Denmark) and Oederlin-Baden (Switzerland). Fischer calls himself "the Harry Alter of West Germany."

The Otto Egelhof concern manufactures thermostatic and automatic expansion valves for both domestic and export markets, deodorizers, bakery freezers to carry coals to Newcastle; i.e., export to the U.S.A.

Don't be surprised if this happens. Consider the Volkswagen.

Commercial refrigeration is the specialty of consulting engineer Otto Lang. (There are as many Ottos as autos in West Germany—and that's plenty). Here are some of the products he designs and helps produce:

Bulk milk coolers, plastic doors for locker plants, top-mounted cooling plates for meat display cases, direct evaporation, tube ice plants, automatic defrosting devices, heated gaskets, deodorizers, bakers freezers, and double-contact plate-type freezers.

Lang also is the author of a Refrigeration, Air Conditioning, Heating, and Ventilating Dictionary prepared simultaneously in five languages! It will be published in September.

Under license agreements with McCray and Admiral, the (Concluded on Page 8, Col. 1)



**WOLVERINE
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Manufacturing refrigerators, air conditioning units or, for that matter, anything requiring copper or aluminum tubing?

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Why not get complete information about savings made possible by these Wolverine products! This advertisement attached to your letterhead will bring competent counsel from Wolverine. Mail it—TODAY!

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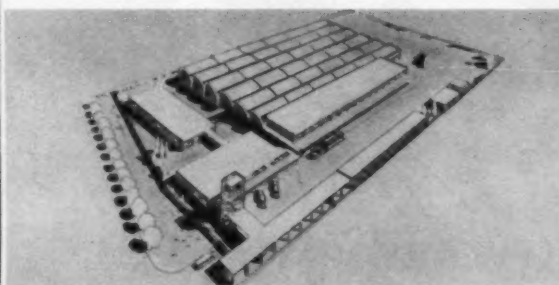
Many basic benefits are available to our customers through this licensing arrangement. Most important, each licensee has the advantage of Tecumseh's extensive engineering research and development program which has resulted in a constant change of new products better adapted to the needs of the industry. Further, these manufacturing facilities make it possible for foreign customers to buy genuine Tecumseh compressors using the most favorable duty and currency exchange. Thus, customers all over the world may be offered proven products, built to Tecumseh's rigid standards, in the shortest possible time and at the lowest possible cost.



Customers everywhere share the advantage of outstanding engineering design at the lowest possible cost.



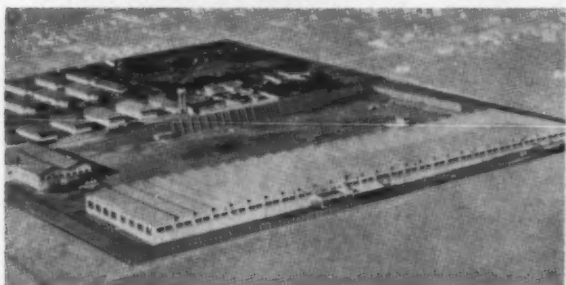
TECUMSEH EXPORT DEPARTMENT —
located in Dearborn, Michigan



FADER, S.A. — licensee
located in Rosario, Argentina



KIRBY REFRIGERATION UNITS PTY., LTD. —
licensee located in Camperdown, Australia



INDUSTRIAS PEREIRA LOPES, S.A. — licensee
located in Sao Carlos, Brazil



DANFOSS MANUFACTURING CO. — licensee
located in Nordberg, Denmark



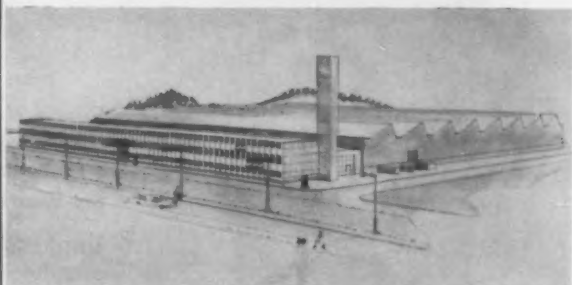
L'UNITE HERMETIQUE, S.A. — licensee
located in Isere, France



ASPERA FRIGO, S.P.A. — licensee
located in Torino, Italy



L. STERNE & COMPANY, LTD. — licensee
located in Glasgow, Scotland



DANFOSS-FLENSBURG G.m.b.H. — licensee
located in Flensburg, West Germany



The Leader Serving Leaders in the Air Conditioning and Refrigeration Industries
TECUMSEH PRODUCTS COMPANY

EXPORT DEPT: P. O. Box 2280, 24530 Michigan Ave., W. Dearborn, Michigan
CANADA: Tecumseh Products of Canada Limited, 1667 Dundas St., London, Ontario.

TECUMSEH, MICHIGAN
MARION, OHIO

German Recovery Amazing --

(Concluded from Page 6, Col. 5)

Carl Fink company manufactures for export and home consumption self-service display cases, commercial and domestic food freezers, household refrigerators, ice cream makers, beer dispensers, frozen food locker plants, and custom-built refrigeration systems of all types.

This 70-year-old concern has impressive factory capacity, plus a reputation for quality products in the export field. Moreover, its world-trade salesmen invariably are expert linguists.

Ability to speak the local tongue is a big help in promoting foreign trade. American salesmen, unfortunately, rarely have that extra asset.

Spezialfabrik Erich Herion manufactures solenoid valves, pressure-operated refrigeration

valves, thermostats, dehydrators, filters, handwheel shutoff valves, testing manifold manometers, etc.

To give you an idea of how a German firm operates in the export field, Erich Herion has field salesmen located permanently in Argentina, Belgium, Chile, Denmark, England, Finland, Holland, India, Italy, Yugoslavia, Luxemburg, Mexico, Norway, Austria, Portugal, South Africa, Sweden, and Switzerland.

Many, many more West German subscribers to AIR CONDITIONING & REFRIGERATION NEWS weren't interviewed or contacted. More's the pity, for obvious reasons. Bosch, for example, is a glaring omission. It's a big factor in world refrigeration.

One West German subscriber, however, deserves special men-

tion at the close of this quick survey. It's the Technische Hochschule Karlsruhe, founded by the universally revered Herr Doktor Professor Plank.

This college is the world's first and foremost academic institution devoted entirely to scientific problems relative to thermodynamics and refrigeration. Prof. Rudolf Plank, who recently retired at the age of 70 to compile an Encyclopedia of Refrigeration, is recognized the world-around as top scientist in our field.

Writer of this article has had many happy moments in his lucky life; but none so humbly prideful as the night when the Australian Institute of Refrigeration bestowed its first honorary memberships upon him and Dr. Plank simultaneously.

In baseball parlance, the writer doesn't play in the same league, and "isn't fit to carry the glove" of Prof. Plank.

FOREIGN PUBLICATIONS

Reader reaction to our several mentions of foreign trade publications indicates a general interest in world literature. In response to many requests, the NEWS publishes the names and addresses of those foreign periodicals of which we have knowledge.

LA TECNICA DEL FRIO
Moreno 3156
Buenos Aires, Argentina

COLD FACTS
97 Wycombe Road
Yagoona, Sydney, Australia

THE REFRIGERATION JOURNAL
156 Pelham Street
Carlton, Victoria, Australia

REVUE REFRIGERATION
27-29 Rue de L'Autonomie
Brussels, Belgium

REFRIGERACAO *
(Portuguese)
Rua Senador Dantas,
80 7° Gr. 706
Rio De Janeiro, Brazil

KULDE
Oster Volgade 8
Copenhagen K, Denmark

THE JOURNAL OF REFRIGERATION
Foxlow Publications Ltd.
19, Harcourt Street
London W. 1, England

MODERN REFRIGERATION
Refrigeration Press Ltd.
MacLaren House
131 Great Suffolk Street
London SE 1, England

BULLEIN DE L'INSTITUT INTERNATIONAL DU FROID
177 Boulevard Malesherbes
Paris 17e, France

REVUE GENERALE DU FROID
9 Rue Coetlogen
Paris (6e) France

REVUE PRACTIQUE DU FROID
254 rue de Vaugirard
Paris (15e) France

DIE KALTE
Gunther Wenzel
Pfalzburger Str. 86
Berlin W 15, Germany

KALTETECHNIK
Verlag C. F. Muller
Karlsruhe Lammstrasse 2
Karlsruhe, Germany

IL FREDDO
Via Donatello 8
Milan, Italy

MEDEDELINGEN
Pasteurstraat 1
Leiden, Netherlands

NORSK FRYSERINAERING
Prinsensgaten 6
Oslo, Norway

KHOLODILNAYA TEKHNIKA
1 Astradamskiy tupik 1-a
Moscow A-8, Russia

REVISTA DEL FRIO
SERRANO 15o,
Madrid, Spain

TIDSKRIFT VOR VARME, VENTILATIONS — SANITETS — OCH KYLTEKNIK
Hantverkargatan 8
Stockholm K, Sweden

KYLTEKNISK TIDSKRIFT
S:t Eriksgatan 86 6tr.
Stockholm, Sweden

Russian Refrigerator Output Rises 529%

UNITED NATIONS, N. Y.—The U.N. reported figures produced by Moscow asserting the Soviet Union made 529% more refrigerators in 1957 than in 1953, the year Stalin died.

The comparison was made by the U.N. statistical office on the basis of official Soviet government reports.

Thinking of —

- changing territories
- expanding your territory
- taking on new lines—

Check the
CLASSIFIED ADS

Your opportunity may
be there.



Announcing
**NEW FUSITE
PRODUCTION**
Servicing All
Europe from
**Almelo,
Holland...**

Fusite N.V. in Almelo, Holland, is now in full production on the complete line of Fusite glass-to-metal fractional horsepower terminals as used by nearly all U.S. domestic refrigerator producers.

Until such time as the Almelo Plant is equipped to produce the complete line of Fusite high-horsepower and electronic terminals, the Dutch Company will act as sales agent for these products.

This is the third complete and self-sufficient plant to go into production on the Fusite line of refrigeration terminals. The original plant in Cincinnati also offers the output of Woodford Mfg. Co. in Versailles, Ky., as an alternate source to its American customers.



THE **FUSITE** CORPORATION

6000 FERNVIEW AVE., CINCINNATI 13, OHIO

In Europe: FUSITE N.V. Königsweg 16, Almelo, Holland

Airtemp announces a

NEW PRICE POLICY

*Airtemp's double pay-off plan
means profitable dealer markup
plus lower consumer prices*



Now, Airtemp dealers will increase their profits with Airtemp's new Double Pay-Off Plan.

When you sell Airtemp air conditioning or heating, you get paid *twice* — once at the time of sale and once by Airtemp with Airtemp's new Pay-Off Certificate.

The value of your Pay-Off Certificates will depend on the value of the equipment sold, but here's the important thing—use your Pay-Off Certificates just like cash when you order new Airtemp equipment.

Airtemp's Double Pay-Off Plan will help you meet price competition and still keep a profitable markup.

 DO MORE BUSINESS WITH AIRTEMP
CHRYSLER

DAYTON 1, OHIO

Airtemp

Not a Final Decision**FTC Examiner's Order Would Dismiss Charges Against Evis for Lack of Proof**

WASHINGTON, D. C. — A Federal Trade Commission hearing examiner recently issued an order which would dismiss for failure of proof charges that Evis Mfg. Co., San Francisco, has misrepresented the benefits obtained from using the Evis water conditioner.

This is not a final decision of the Commission and may be appealed, stayed, or docketed for review.

In a previous initial decision, Examiner Abner E. Lipscomb dismissed the charges on grounds that the evidence in support of the complaint was legally inadequate. The Commission subsequently set aside this dismissal and remanded the case to the examiner to receive into the record any relevant evidence on further scientific tests of the product.

Two New Witnesses Tell of Tests

Following the remand, counsel supporting the complaint presented two witnesses from the University of Virginia staff who testified concerning five different tests performed with the device to determine whether it prevents and removes scale from water-system parts, saves soap, or removes entrained gases.

The FTC's complaint of Feb. 5, 1954, had alleged to be false the company's claims that the Evis water conditioner is made of specially processed metal and produces a catalytic effect on water passing through it, resulting in numerous benefits.

The complaint described the device as "an oversized pipe coupling with an interior post integrally cast in place, which is intended to be fitted into water systems for the purpose of beneficially treating and conditioning water."

Evidence Does Not Support Charges

After re-evaluating the entire record in the light of the new testimony, Examiner Lipscomb again held that the evidence does not adequately support the charges.

After pointing out that the scientific testimony tending to support some of the charges conflicts with the testimony of satisfied consumers, he said:

"It appears, on the one hand, that we may be here concerned with a worthless gadget, while, on the other, we may be here confronted with the first practical application of a device operating upon a principle heretofore unrecognized by present-day science. In the presence of such a possibility, justice to the respondents as well as to the public interest requires that we approach with caution the issuance of a cease-and-desist order which might well mean the economic destruction of the respondents and the consequent loss of their device.

"After considering all the evidence in the record, we are in such doubt as to the effectiveness of the Evis water conditioner that we expressly decline

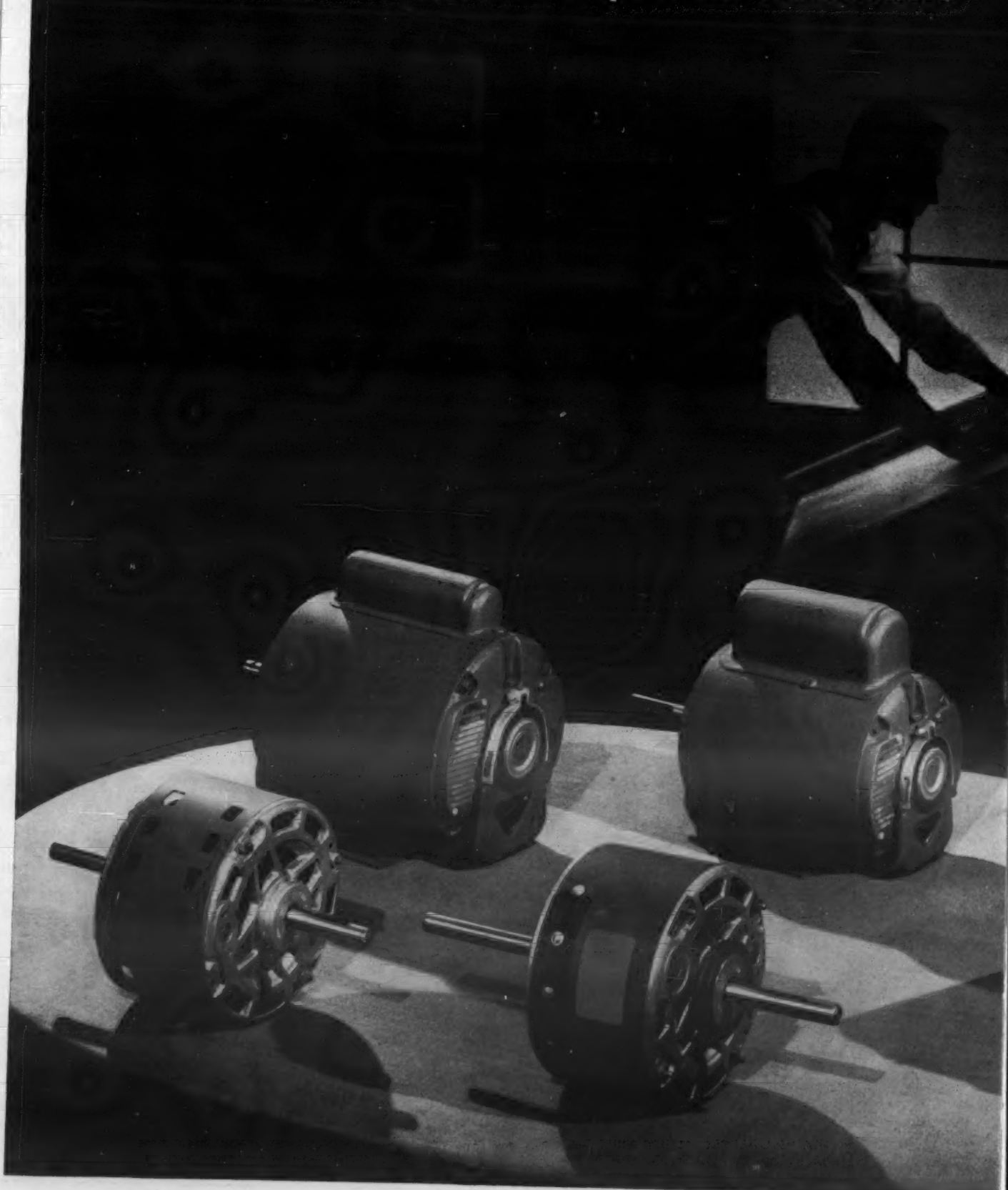
to make an affirmative finding that it does beneficially affect water passing through it. On the other hand, we recognize that the evidence supporting the complaint is too much at variance with itself, and too convincingly contradicted by the testimony of numerous witnesses who have performed parallel tests with the Evis device, to warrant a finding that the Evis water conditioner is worthless.

"We believe, therefore, that the disposition of this proceeding must be controlled by the legal principle that when conflicting evidence is in such a state of balance that substantial doubt exists as to the conclusions to be drawn therefrom, the burden of proof has not been sustained, and he who bears that burden must fail."

Discussing the evidence taken after the remand, the examiner ruled that some of the tests which tend to support the charges were deficient for various reasons.

For example, he noted, the stills used in the tests made to determine the device's ability to prevent or remove scale were not drained off in the manner essential to the successful operation of the Evis unit. Thus, he held, "we doubt if they [the tests] represent a fair trial of the device under practical working conditions."

Another test indicated that the device would not prevent

How G-E motors, tailored to your air conditioners

corrosion. This test, he ruled, is of questionable probative value because screen wire was used, and the company's advertising refers to rust stains and corrosion in household sanitary fixtures, and not rust of metal.

Still another of the new tests concerning the product's soap-saving qualities proved nothing new, the examiner held. This test, like its predecessors, he said, was designed to discover whether the device reduced the amount of soap required to

neutralize minerals in the laundry tube, rather than to determine if less soap was required to get the clothes actually clean. These tests, he said, were looking for a chemical change in the water which the inventor of the Evis device said would not occur.

The company claims that equal amounts of soap are needed to accomplish the original neutralizing of minerals both in Evis-treated and in untreated water, but that in the

actual washing process less soap is required in the Evis-treated water.

Tests Show Device Doesn't Remove Oxygen

The test for removal of entrained gases indicated that the device does not remove oxygen from water.

The examiner noted that, although the test was different from actual operation under ordinary use, it does tend to sustain the complaint's allegation

on this particular point. In this connection, he pointed out that some of the evidence, both before and after remand, supports some specific charges and the general allegation that the device does not change the physical behavior of water passing through it. Most, if not all, of the Commission's scientific witnesses seemed to be of the opinion that hard or mineral-loaded water could be changed only by chemical means, which the device admittedly does not

do. Continuing, Examiner Lipscomb said that if this opinion is correct, the device is worthless; however, all evidence pointing to that conclusion is subject to defects within itself, which materially weaken its probative value. Furthermore, it is contradicted by the numerous witnesses presented by the company, many of whom are scientists in their own right.

92 Users of Device Vouch For Benefits

Of the 100 witnesses who testified for the company before the remand, 92 were users of the device, each of whom testified to at least one benefit obtained from using it. Each testified to critical water problems and that the device substantially alleviated them with large savings in manpower, cleaning and repair expenses, fuel and power bills, etc.

Noting that a number of these witnesses made parallel practical tests, in which one part of their equipment was supplied Evis-treated water and another part with untreated water, the examiner cited this example:

The superintending engineer of the Post Office and Court House building in Fresno, Calif., testified that since its opening he had contended with flint-like scales forming in the copper tubing of the building's three identical and independent air conditioning systems. An Evis unit was installed on one of the systems, and at the end of the cooling season there had collected only a soft-fluffy material easily cleaned out, while the other two systems continued to scale as in the past. Evis units were later installed on the other two systems with similar beneficial results.

Respondents Would Not Reveal Composition of Unit

The previous testimony did not disclose how the cast-iron Evis water conditioner is processed or the precise analysis of its elements, but did show that it differs from ordinary cast-iron.

(Four metallurgists who analyzed the composition of the cast iron unit said the testing method used was incapable of identifying 15 to 26 elements possibly present, and the respondents refused to divulge what those elements were.)

Concerning the composition of the bronze unit, this testimony revealed only that it is different from ordinary bronze. The latest testimony did not refer to this issue.

"Despite all the evidence in the record," the examiner concluded, "we still do not know how the Evis water conditioner is manufactured or processed, or how its purported benefits are produced. Respondent Wells [Arthur N. Wells, the company's vice president], the inventor of the device, admits that he himself does not fully understand the principle upon which the Evis water conditioner operates, nor the potentialities thereof. Concerning a similar admission, the United States Supreme Court has stated: 'Whether [the inventor] knew the scientific explanation of it is unimportant, since he did know and use the device and employ the method which produced the desired results.'"

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To simplify your air conditioning design problems, you're looking for a particular motor which will give you the high power factor and efficiency you need. Chances are you'll find a standard motor that will satisfy your needs in General Electric's complete line of Form G motors.

IF A NON-STANDARD MOTOR IS NEEDED to solve your problem, General Electric application engineers are ready to help you get the best motor for your air conditioner. They'll help you tailor a motor to meet your performance and cost requirements . . . and give you fast sample service to help speed your production cycle.

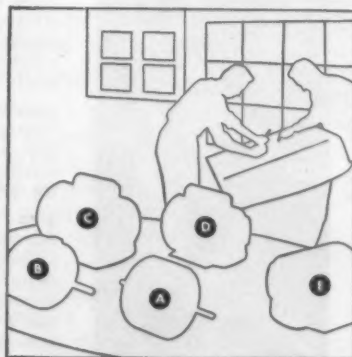
YOU GET ON-SCHEDULE DELIVERY of the motors you need to get your product into production without delay . . . a service made possible with General Electric's flexible, multi-plant manufacturing facilities.

THE DEPENDABLE PERFORMANCE of Form G motors has been proved by the outstanding record of the millions of motors put in use since G.E. pioneered the design of these smaller, lighter motors. Greater customer satisfaction is yours because of such features as G.E.'s scientifically designed lubrication system, and virtually moisture-proof insulation system.

These are only a few of the many G-E motor benefits that will help to keep your new design program on schedule, and improve your product as well. If you'd like to get help on a specific problem, contact your nearby G-E Apparatus Sales Office. For more information on Form G motors, write for Bulletins GEA-6424 and GEA-6533, General Electric Co., Section 702-76, Schenectady 5, N. Y.

FOR DIRECT-DRIVE ROOM UNITS,
FOR DIRECT DRIVE CENTRAL UNITS,
FOR BELT-DRIVE CENTRAL UNITS,

- A permanent-split-capacitor thru ¾ hp;
- B shaded pole thru ¾ hp;
- C cap.-start thru ¾ hp at 1725 rpm, thru 1 hp at 3450 rpm, and
- D perm.-split-cap. thru ¾ hp;
- E split-phase thru ½ hp.



Progress Is Our Most Important Product

GENERAL  ELECTRIC

Native Population Not Interested In Cooling

Belgian Congo Firm Gets Competition from Non-Specialized Firms Selling Room Units

LEOPOLDVILLE, Belgian Congo—Hard competition comes from non-specialized companies selling room air conditioners at low prices and hoping to make an easy profit with no overhead, poor installation facilities, and no service department.

We are obliged to sell our room units directly to the consumer with a gross profit margin of only 15%—and our prices are still about \$40 higher than most competitive brands.

Our only net profit on this type of equipment is publicity for our organization and service department.

Does the situation sound

familiar? But this is not any city in the United States. It is Leopoldville in the heart of central Africa.

The complainants are Fernand de Vinck, manager, and A. Arnauts, engineer, for Africongo, sole distributor for Carrier Corp. air conditioning in the Belgian Congo and Ruanda-Urundi.

Africongo also imports all products offered by Sabal-Kielmann of New York City and all Mueller Brass Co. products. From Europe, it distributes Siemen (Germany) domestic refrigerators and Danfoss (Denmark) automatic products.

"While we cover a very large territory," de Vinck narrates, "the market is very small. Total population is approximately 4 million natives and 100,000 Europeans. Leopoldville, the capital, has only 20,000 white inhabitants. This is approximately 5,000 to 6,000 families.

"Actually the air conditioning market is reduced to this minority because they alone feel the need for air conditioning.

"Only five years ago, even white people still considered air conditioning as a luxury, and our first activity was to teach the European population (to most of whom air conditioning

was unknown) what benefits in health, comfort, and efficiency it would give.

"Furthermore there were practically no specialized distributors capable of making a correct quotation, nor an installation larger than a room unit and absolutely no adequate service after sales.

"When Africongo took the Carrier representation in 1953, our company wanted to start in a right manner, that is, with an organization capable of handling all problems.

American Engineer Hired

"For this purpose, our company hired an American engineer chosen by Carrier International Div., who stayed with Africongo for three years.

"Our Carrier department personnel in 1953 consisted of two white people and six native mechanics. In 1958 it is 10 white people (engineers, sales-

men, and servicemen) and 50 native mechanics.

"Practically no responsibility can be given to native personnel. White personnel is very expensive and native personnel has to be supervised continually in order to do a good job."

Outlook for future progress is good, de Vinck asserts. Plans are being drawn for important industrialization of the lower Congo. Within six to seven years, he said, the first part of the world's greatest hydroelectric power plant should be finished at Inga on the Congo.

In addition, important investments are expected which should result in a further expansion of the refrigeration and air conditioning market.

Would Like American Mfrs. To Visit Area

American manufacturers could help Congo distributors by visiting the country, de Vinck believes. It would help to understand their peculiar problems and would automatically result in better cooperation.

He also called for quick action on orders and requests.

"Inland transportation is still a very tough problem in our country," he explained. "Steamers bring equipment from New York City to Matadi (the port of Congo) in 17 days.

"But we usually have to wait another month to have this equipment shipped from Matadi to our warehouses in Leopoldville, approximately 250 miles by rail. So, all reduction of delays inside the United States are very helpful to us."

Sales literature and technical literature from manufacturers is also important, he declared.

Most Important Installations

De Vinck listed the following as his company's most important installations in the Congo.

1. Otraco building—Carrier Conduit Weathermaster system. Eleven floors of offices. Two Carrier centrifugal compressors totaling 450 tons of refrigeration. This is the largest air conditioning installation in Central Africa.

2. "LE CINQUANTEN-AIRE," so-called in honor of the Belgian Congo's 50th anniversary, office and apartment building. Capital's tallest structure: 14 floors. Carrier Conduit Weathermaster system for the apartments and conventional low pressure duct system for the offices. Two Carrier centrifugal refrigeration machines with a total cooling capacity of 300 tons.

3. New building for the Consulate General of the U.S.A. in Leopoldville. Low pressure duct system—65 tons of cooling.

4. New Texaco building in Leopoldville. Built-up system with reciprocating water chilling machine, 80 tons of cooling.

5. New theatre of the ZOO, 50 tons of cooling, built-up system.

6. Largest motion picture theatre in Leopoldville, 50 tons.

7. Largest supermarket in Leopoldville, 40 tons of cooling in packaged units.

8. One hundred and forty tons of cooling capacity in smaller packaged units installations for offices, laboratories, restaurants, and homes.

9. More than 1,800 room units installed.

Amana

ROOM AIR CONDITIONERS

Rated Quietest of all tested!

June Report by America's Most Respected Independent Research Group gives **Amana** Top Rating!

Famous Amana quality construction has been publicly acclaimed in print by the leading American independent research organization in its June report!

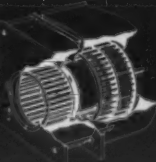
The revolutionary new Amana Silent-Aire Turbine, coupled with extra-dense, extra-thick insulation and Amana heavy-duty steel casing, gives the quietest air conditioning ever! So silent you can sleep all through the hottest, stickiest night in cool, dry comfort! Actually rated *quietest of all* . . . both inside the room, and outside the window!

Amana Compact Air Conditioner comes in full-capacity, 7½ ampere, 1 horsepower, plug-in model. Owner can install wherever household wiring is adequate. Outstanding Air Command Series sets the standard for the industry . . . not just last-year's models restyled . . . the *finest* in air conditioning!

Face the facts about room air conditioning! Get the Best Buy, Amana! Lowest suggested list prices for size and features of all air conditioning in its class. Why settle for less than the best!



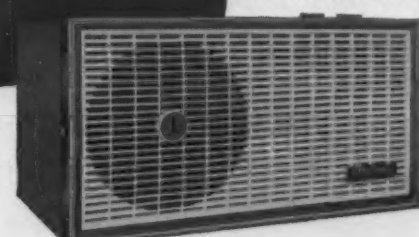
The superb new Air Command Series! Commended in tests! Super-quiet, and automatic thermostat lets you set it, forget it! Electrostatic filter for extra-clean air, extra-long life! Exclusive Amana glider control gives seven cooling settings! New Amana Rotating Air Deflector Grill turns full 360° to provide cool, clean air in any direction! Also available in amazing "Year 'Round" Heat Pump models . . . providing gentle warmth on cool Spring, Fall days!



New Amana Silent-Aire Turbine



No overhang, inside or out!



New Amana full-capacity, 7.5 Amp., 1 H.P., plug-in Amana Compact Series saves money two ways! Low original cost, lowest operating cost. Amana is *best by test*! Actually uses less electricity than an electric toaster!

20% increase in fin cooling surface means top cooling capacity! Superb two-speed cooling, adjustable no-draft ventilator! Fits almost any window, plugs into standard 115-volt household circuit where wiring is adequate!

Quietest of all! Exclusive Amana Silent-Aire Turbine, plus extra-dense, extra-thick insulation, and superb Amana craftsmanship, gives extra-quiet super-cooling! Amazing Dynel filter means clean air always!

Slim . . . Trim . . . Low! Actually lower, thinner, narrower than most so-called "Slim" or "Thin" models! 13¼" high; 25" wide; 16¼" deep! Power-packed air conditioning in compact size! Only pounds heavier than self-styled "Portables" . . . yet gives up to three times as much cooling!

Easiest of all to install! Goes into window in minutes! Can "do-it-yourself," conveniently, economically, with free installation kit!

★ ★ ★ ★ ★

For complete information write Amana today! Amana, most complete line of room air conditioners there is. From the home of the famous Stor-Mor Freezer . . . that is "guaranteed to outperform all others."

AMANA REFRIGERATION, INC., AMANA 14, IOWA

New Rolls-Royce Auto Unit Resembles Early U.S. Models, But Costs Plenty

LONDON, England—New air conditioning system introduced by Rolls-Royce for its plush and expensive Silver Cloud and Bentley cars may or may not be plush, but it is expensive, at least by U. S. standards.

Model for its standard series of cars sells for \$1,078 plus tax of \$539 while that for cars with custom-built bodies is tagged at \$1,540 plus \$770 tax, presumably installed.

The Rolls-Royce unit is claimed to have rapid pull-down and adequate capacity—features allegedly lacking in most U. S. automobile air conditioners, according to the British trade journal *Modern Refrigeration*.

Exactly how these problems have been overcome is not made

100% clear, however.

New system of Rolls-Royce is a trunk model, an arrangement which has been pretty much abandoned in this country. Equipped with two blowers having a combined capacity of 400 c.f.m. at high speed, the evaporator case is mounted in the trunk. Air is discharged through outlets on either side; recirculated air intake is in the center behind the rear seat. A thermostatic expansion valve is employed on the evaporator.

A two-cylinder compressor mounted on the engine block is fitted with a magnetic clutch. Condenser is installed ahead of the radiator.

Only control of temperature apparently is through varying

speed of the blowers by a single switch on the dash which also energizes the magnetic clutch on the compressor.

Low limit on temperature of the system is controlled by a pressure-operated by-pass valve on the compressor. A by-pass line runs from the upper section of the condenser through this valve and thence into the suction line just ahead of the compressor.

This arrangement has been used on some U. S. makes, but usually with a manual over-ride on the by-pass valve to provide passengers with additional means of controlling temperature. No such over-ride control appears to be included in the Rolls-Royce system.

One feature of the Rolls-Royce unit that could increase its capacity is the heat exchanger arrangement provided in the refrigerant lines between the compressor and evaporator.

India Needs 50-Cycle Air Conditioners That Can Handle Dry Heat In North

NEW DELHI, India—While air conditioning sales have tripled in the past three years in India and 1958 sales are expected to rise 100% over last year, American manufacturers have two major problems to solve to exploit the market.

V. P. Punj of Fedders Lloyd Corp., Ltd. here, which manufactures and/or assembles Fedders air conditioners under license, outlined these problems.

One is that compressors produced in the United States are all 60 cycle while the frequency prevalent in India is 50 cycles.

"No American manufacturer has yet produced a compressor that is originally designed to work to the maximum efficiency on 50 cycles," Punj declares.

Second problem is that the design of the American air conditioner does not allow for the dry heat which obtains in the northern parts of India. Arrangement has to be made for the addition of water to the condenser section, Punj said.

"We have experienced a lack of understanding by American manufacturers as far as the high ambient existing in various parts of this country," he commented. "Manufacturers have always avoided facing up to this difficulty. Units are not being made for these conditions."

Punj noted that refrigerators are also in great demand in India. An acute shortage prevails because the government has banned their import.



EACH IS 2 SWITCHES IN 1 YET YOU PAY NO PREMIUM

LOOK AT THESE ELECTRICAL RATINGS SERIES 272, 273 PRESSURE CONTROLS without external adjusting knobs

Motor Ratings	Single Phase			Two and Three Phase			
	115 V.	208 V.	230 V.	208 V.	230 V.	440 V.	550 V.
A.C. Full Load Amps.	18.4	13.8	12	3 H.P.	3 H.P.	3 H.P.	3 H.P.
A.C. Locked Rotor Amps.	110.4	82.8	72	—	—	—	—
D.C. Full Load Amps.	4.6	—	2.3	—	—	—	—
D.C. Locked Rotor Amps.	46	—	23	—	—	—	—
A.C. Non-Ind. Amps.	24	24	24	—	—	—	—
D.C. Non-Ind. Amps.	3	—	0.5	—	—	—	—

Pilot Duty — 125 VA.; 115 to 600 V. A.C.
57.5 VA.; 115 to 600 V. D.C.

SERIES 1272, 1273 PRESSURE CONTROLS Single or dual function

Motor Ratings	Single Phase			Two and Three Phase			
	115 V.	208 V.	230 V.	208 V.	230 V.	440 V.	550 V.
A.C. Full Load Amps.	24	24	24	16	15	7.5	6
A.C. Locked Rotor Amps.	144	144	144	96	90	45	36
D.C. Full Load Amps.	4.6	—	2.3	—	—	—	—
D.C. Locked Rotor Amps.	46	—	23	—	—	—	—
A.C. Non-Ind. Amps.	24	24	24	—	—	—	—
D.C. Non-Ind. Amps.	3	—	0.5	—	—	—	—

Pilot Duty — 125 VA.; 115 to 600 V. A.C.
57.5 VA.; 115 to 600 V. D.C.

Penn 2-pole refrigeration controls handle polyphase motors without the use of magnetic starters

Here's real application versatility and advantages. With these controls, cost of contactor is eliminated if motor has built-in overload protection. If motor requires external overload protection, the motor starter can be replaced by the more economical "manual starter." So... in either case, these Penn controls *save you money!*

With their two separate circuits, each control is really 2 switches in 1. Two separate load circuits can be controlled. When wired as a 2-pole switch in single phase circuits, it always breaks the "hot" line. On 3-wire, single phase A.C. systems, it can control simultaneously a 230 volt compressor motor and a 115 volt fan motor, solenoid valve or other device.

So, don't settle for less. Ask your wholesaler for Penn... the refrigeration and air conditioning industry's favorite control.

PENN CONTROLS

are distributed
AROUND THE WORLD
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Perfection Parts Ltd.

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American Refrigerator Company

MILANO, ITALY
Arcotec

TOKYO, JAPAN
Shinwa Trading Co., Ltd.

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EXPORT DIVISION: 27 E. 38th ST., NEW YORK, N. Y.

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Dept. of Commerce World Trade Services

U. S. Field, Foreign Service Officers Ready To Help With Advice, Facts and Figures, and Emergency Services

By Arch Black, Chief, World Trade, Michigan Field Office

The importance of our national economy of a high level of export-import trade has prompted the U. S. Department of Commerce to maintain an experienced and qualified staff in important commercial and industrial centers throughout the United States to provide on-the-spot assistance on all phases of international trade.

Dealing directly with exporters, importers, services, and trade groups, the field office serves as the outlet for the information gathered throughout the world by the American Foreign Service, the statistical data on export-import trade compiled by the Bureau of the Census, and the reports and publications of the Bureau of Foreign Commerce and Office of Business Economics.

The services are many and varied, ranging from market prospects abroad for specific products to trade and exchange controls in effect in world markets and our U. S. export controls. Duties assessed against American products, as well as other competitive conditions to be met, are among the items of information in constant demand.

Names of Potential Distributors

Names of potential distributors and reports on their standing in the trade are available as well as sources of imports and direct leads for foreign investment and licensing. Current procurement opportunities financed by the International Cooperation Administration are gladly shown.

Of special importance are the facilities made available through the field offices on export control regulations including the latest information on items subject to control, amendments and extensions to validated licenses, and emergency service in special cases.

Assistance for New Exporters

These services range from assistance to a new exporter in determining the prospects for the sale of his goods in specific markets, to assistance in clearing a shipment held up at a United States port because of lack of a valid export license.

Services are also available to importers. For the new importer, once he has determined the products he wishes to import, the field office will guide him to sources of supply.

ASSISTANCE TO NEW-COMERS. Many inquiries are received in Commerce from aspiring foreign traders and we like to get them. The publications "Guides for the Newcomer to World Trade"; "Foreign Trade Practice" Reference Sources; and "Import and Export Practice" are all useful tools in this work. Personal counseling is given.

REPORTS FROM ABROAD INCLUDE SPECIFIC TRADE OPPORTUNITIES. The Field

Offices in their role of maintaining direct liaison between the Department in Washington and the international trade community regularly receive reports from abroad which contain specific opportunities for engaging in foreign trade.

New Opportunities in Approved Countries

The Bureau of Foreign Commerce furnishes us listings of all opportunities developed by our special Trade Missions in all approved countries.

In these reports are included such data as: new markets or

sources of supply abroad; spot trade offers; opportunities to negotiate patent licensing agreements with foreign manufacturers; and possible openings to establish new industries abroad through capital investment.

"Foreign Commerce Weekly," which is available on a subscription basis, lists each week many of the foregoing opportunities. Also, it contains itineraries of foreign visitors to the U. S. in addition to many other subjects such as "Economic Conditions Abroad," "Controls on International Trade," "News by Commodities," "Transport and Communications," and "U.

S. Government Actions," etc. "World Trade Information Service" also on a subscription basis, is issued in four series covering "Economic Reports," "Operations Reports," "Statistical Reports," and "Utilities Abroad." The first two of the series inform regarding doing business abroad and living and operating costs.

Library of Commercial Directories

TRADE LISTS. The Field Offices maintain files of classified listing of foreign trading firms, industrial or service organizations, and professional men, by countries, known as "Trade Lists."

Through this medium, United States businessmen conveniently may identify prospective trading connections, customers for services, and areas of competition.

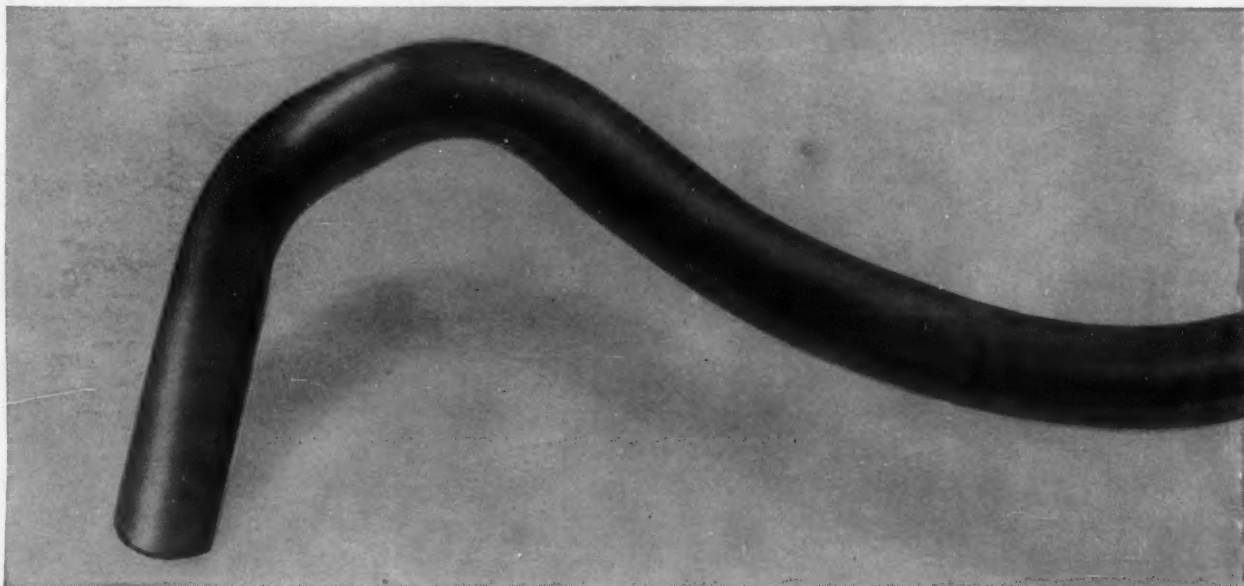
To supplement this service,

the Commercial Intelligence Division in Washington also maintains a library of commercial directories and other reference works published throughout the world.

Many of these directories are available for consultation in the Field Office. Lists of foreign firms engaged in special activities are prepared on request. Regular Trade Lists and special lists may be purchased for \$2.00 each.

WORLD TRADE DIRECTORY REPORTS. One of the services most frequently in demand is the *World Trade Directory*. This consists of a file of more than 500,000 reports on individual foreign firms and individuals, based on data gathered by the Foreign Service of the United States.

These reports, available to qualifying U. S. companies, contain sales information such as the size and type of business,

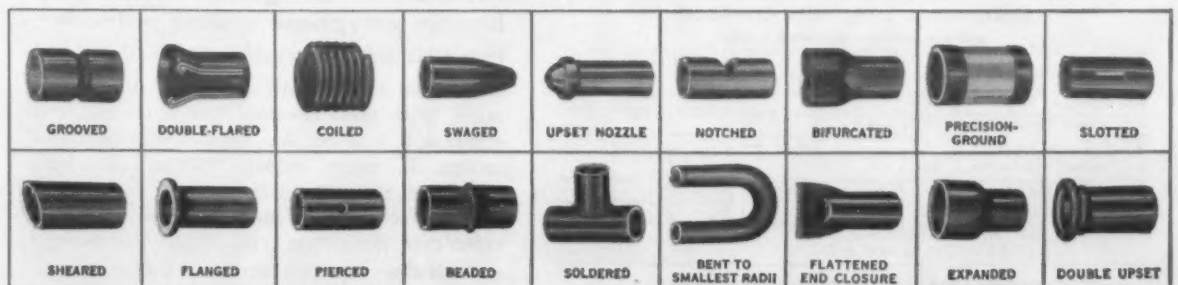


Multiple-bend discharge tube for refrigeration compressor is fabricated quickly, economically on Bundy-designed

fixtures. Seven bends are put into a 7" length of 3/4 x .028" Bundyweld in just one semi-automatic operation.

BUNDYWELD...BENT

TYPICAL FABRICATION OPERATIONS POSSIBLE WITH BUNDYWELD TUBING



Shown above are but a few of the fabrication operations possible with Bundyweld Steel Tubing. Many of these — and others not shown — were developed through solving

a specific problem brought to us by a customer or prospect. At any stage in the development of your product, Bundy invites you to take advantage of this design service.

BUNDYWELD IS DOUBLE-WALLED FROM A SINGLE STRIP



Bundyweld starts as a single strip of copper-coated steel. Then it's . . .



continuously rolled twice around a laterally into a tube of uniform thickness, and



passed through a furnace. Copper coating fuses with steel. Result . . .



Bundyweld, double-walled and brazed through 360° of wall contact.



NOTE the exclusive Bundy-developed beveled edges, which afford a smoother joint, absence of bead, and less chance for any leakage.

lines handled, sales territory, general reputation, and trade references of individual foreign firms. They are obtainable through any Commerce Field Office at \$1 each.

Because many American firms are becoming increasingly concerned with the reliability of their actual and prospective foreign connections, from a security point of view, information of this nature is currently being furnished.

ADJUSTMENT OF TRADE DIFFERENCES. When disagreements arise between United States foreign traders and their trade connections in foreign countries, the Department of Commerce takes steps to adjust such misunderstandings where possible.

The Field Offices and the United States Foreign Service are the instrumentalities through which the facts are brought to light in these cases

and amicable adjustments arranged.

Your Commerce Department and the assistance rendered by the Foreign Service in adjusting trade differences are restricted to a purely informal basis and do not include the performance of arbitrator, collector, or legal services involving formal procedure.

AN AMERICAN BUSINESSMAN TRAVELING ABROAD may—upon request to the local field office—have every American embassy, consulate, and consulate general in the countries he will visit advised of the purpose of his trip and given general background information on his firm.

Commercial officers of the U. S. Foreign Service, in this way, are alerted to American businessmen's needs and are able to offer appropriate assistance more quickly.

BUSINESS FIRMS MAY RE-

QUEST LISTING IN EXPORTERS-IMPORTERS INDEX. Business firms interested in trading with other countries may register their interest by filing an application for listing in the *Exporters-Importers Index*.

The information supplied in this registration, treated as confidential at all times, serves to pinpoint particular interests of individual firms.

With this as a guide, both the Department in Washington and the Field Offices are better able to bring to the attention of registrants special items of particular interest to them.

MOST EXPORT CONTROL PROBLEMS CONCERN THREE BASIC QUESTIONS. The foreign trader can secure valuable assistance from a Department of Commerce Field Office on export-control regulations. Most export-control problems revolve around three basic

Airtemp at Australian Trade Fair



MODERN ideas were combined with good taste in the design of Chrysler Australia, Ltd. booth at the recent Australian Institute of Refrigeration and Air Conditioning show. This was the first showing of the new Australian-built Airtemp "packaged" units.

questions: It a license necessary? How is one obtained? In an emergency what special service is available?

Regarding the necessity for a

license, the Field Office provides information on the proper classification of the commodity according to Schedule B—Statistical Classification of Domestic and Foreign Commodities Exported from the United States; checks the Positive List to determine whether the commodity is subject to validated license requirements; and interprets BFC regulations to assist the exporter in deciding whether his individual ships under specified conditions may be exportable under one of several types of general licenses.

How is a license obtained? This is an important question on which the Field Offices also are prepared to assist.

The exporter can be instructed in filling out an application form and informed of unusual requirements which may apply to his commodities, such as filing dates, documentation, or specialized requirements for exportations to certain areas.

Field Offices provide information on BFC policy with respect to license issuance on certain commodities and to destinations of special significance.

Field Offices May Give Emergency Services

FIELD OFFICES EQUIPPED TO GIVE EMERGENCY SERVICES. An exporter who knows he needs a license, and although he knows the rules to follow in order to apply for one, may find himself in an emergency situation due to circumstances beyond his control.

In such a situation the Field Office is able to give prompt special service to help the trader in need. Field Offices in export centers have been delegated authority to issue license amendments involving:

(1) Extension of validity period; (2) correction of obvious typographical errors by BFC; (3) increase in quantity or dollar value within certain prescribable limits, and for certain countries; (4) change of licensee's address.

If an exporter, through no negligence on his part, suddenly finds himself in urgent need of an export license, he may use our facilities. In port cities, Field Office personnel on export control have a good working relationship with Collectors of Customs; they understand collectors' problems as well as those of the exporters.

All those concerned with foreign trade will find it to their advantage to utilize the services and facilities provided by the Field Service.

7 TIMES IN 7 INCHES

...and Bundy's fabrication experts
mass-produced the part at low unit cost!

Seven bends in just seven inches—a tough fabrication operation, impossible with ordinary tubing! Yet Bundyweld® Tubing took the stresses without flattening or cracking . . . stayed *leakproof* by test.

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Bundy can point out moneysaving shortcuts.

At home or abroad, Bundy fabrication service is unexcelled for speed, precision, economy. Plants in the Americas and affiliates in Europe and Australia turn out complex tubing parts by the millions; package them with care, deliver on schedule.

Anywhere in the world, it pays to check first with Bundy. Get the best in small-diameter tubing *plus* free design service, low-cost fabrication. Call, write or wire us today! Outside the U.S.A., contact an affiliate listed below, or cable BUNDYTUBE.

BUNDY TUBING COMPANY • DETROIT 14, MICHIGAN, U. S. A.

WORLD'S LARGEST PRODUCER OF SMALL-DIAMETER TUBING • BUNDY TUBING IS DISTRIBUTED THROUGHOUT THE FREE WORLD

There's no real substitute for

BUNDYWELD® TUBING

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Argentine Power Shortage Is Deterrent to Rapid Expansion of Air Conditioning Sales

WASHINGTON, D. C. — A long range market for air conditioning in the residential as well as the commercial market. In another report, the bureau says that there has been an increase in production of household refrigerators in Argentina because of a government decree passed in 1954 declaring the refrigeration industry to be "of national interest" and imposing tighter restrictions upon the importation of complete refrigerators and components.

Most of the air conditioning that has been done thus far in Argentina has been in commercial establishments, and the installations have for the most part been assembled on the job. Some of the parts are imported from the U. S. Buenos Aires, with an expanding population and long, hot and humid summers, should offer an excellent

seek to export some of its production to other South American nations, says the report, since it has bi-lateral agreements with Uruguay, Paraguay, and Bolivia, with an agreement with Chile under negotiation.

However, some of these countries have fairly substantial production of their own (under licensing agreements) and furthermore, the fact that manufacture of refrigerators in Argentina has been designated officially as "of national interest" suggests that the government would probably not be disposed to permit their large scale exportation until national requirements are satisfied.

Argentina may eventually

But Most Praise Relationships

Foreign NEWS Subscribers Express Chief Complaints Against U. S. Firms

DETROIT—While almost all NEWS subscribers from abroad praise their relationships with American manufacturers, some voice specific complaints about rough spots that could be smoothed.

While stories throughout this issue cite the troubles of particular individuals and firms, here is a round-up of the five most frequent difficulties.

1. American manufacturers generally fail to offer equipment specifically designed to operate on 50 cycle current—prevalent in most other areas of the world. The difficulty here seems to be that sales literature and specifications show capacity

ratings at 60 cycle operation. When the foreign customer cannot get that capacity on 50 cycle current, he is unhappy.

2. Importers, severely strapped for foreign exchange, chafe at short term credit offered by American manufacturers. Some say they lack the capital to meet these terms. Others say they have the capital and could pay in their own currency—which, apparently, American manufacturers won't accept.

3. In countries where the government has clamped tight restrictions on importation of air conditioning and refrigeration equipment, distributors there would like to see more American manufacturers open local plants or license local manufacturers to make their equipment inside the country.

This could reduce the selling price of the equipment, highly desirable to many representatives abroad.

4. Some distributors complain that they can't get complete parts lists and technical manuals for the equipment they handle. Lack of the former makes it almost impossible to order needed parts when they have no part numbers to work with—especially when the factory is thousands of miles away. Lack of the latter complicates service problems.

Even when service manuals are supplied, they are almost invariably in English—of little help to the servicemen who cannot read the language.

5. In countries where temperatures soar well above 100° F. or where relative humidity is generally very high distributors complain that American air conditioners are not designed to operate efficiently. For the former, condensers are not big enough. In the latter, metal protection is insufficient to prevent rapid rusting.

You can count on
HIGHER PROFITS

WITH

Curtis

AIR CONDITIONERS

HERE'S WHY...

MAXIMUM DEPENDABILITY

Each CURTIS unit is backed by 104 years of engineering and manufacturing experience... one of many reasons why CURTIS air conditioning equipment operates at maximum efficiency with a minimum of maintenance.

CUSTOMER SATISFACTION

The long operational life and minimum service requirements of CURTIS air conditioning, combined with peak performance, assures satisfied customers.

PRE-SOLD PROSPECTS

National advertising beamed at virtually every prospect category helps pre-sell Curtis equipment for you. CURTIS provides sales and promotional aids to make your selling job easier.

PRICED FOR PROFITS

All Curtis air conditioning equipment is competitively priced, with a very generous profit margin for you!

REMEMBER—
you can count on

Curtis

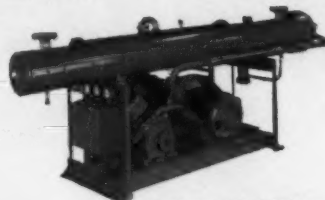
OUR 104th YEAR
MANUFACTURING COMPANY • REFRIGERATION DIVISION
1912 Kienlen Ave., St. Louis 20, Mo.

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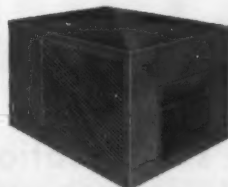
Represented in Canada by—T. M. Hall Ltd., 30 Milner St., Montreal West 28, P.Q., Canada



Evaporative Condensers
and Cooling Towers
up to 100 tons
Air handling units to match.



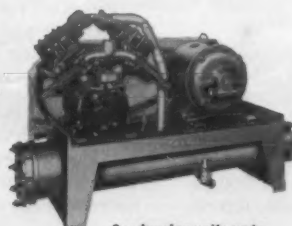
Packaged Liquid Chillers—
7½ to 100 tons—F-12 or F-22.
With room console units to provide
controlled cooling and heating
without duct work.



Packaged Air Cooled Air
Conditioning Units—2
through 7½ tons. Residential
and commercial applications.



Packaged
air conditioning
units—
3 through
50 tons.



Condensing units up to
100 tons—F-12 or F-22.

PERFORMANCE PROVED!

Madden HP-41
Hermetic Port Valve



**1 VALVE
PIERCES
4 TUBE
SIZES!**

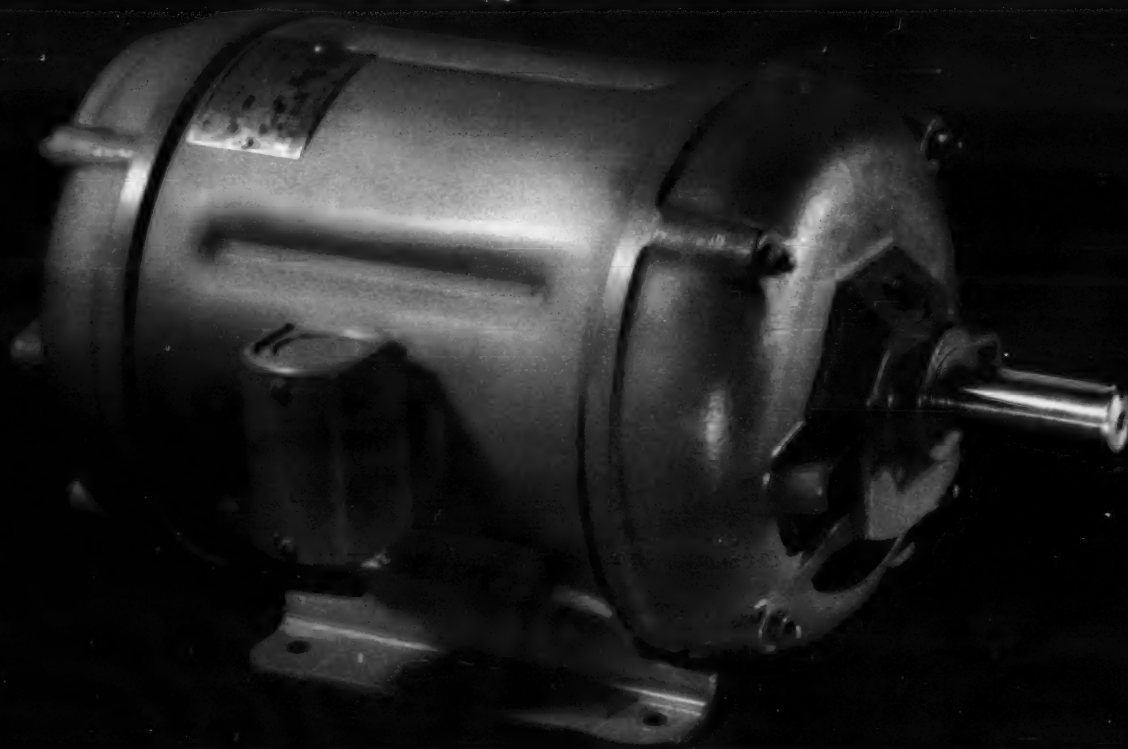
3/16	1/4
5/16	3/8

For 1/2 inch tube ask
for the Madden HP-68

Write for free catalog R-358 listing
other Madden performance-
proved products: valves, fittings,
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MADDEN BRASS PRODUCTS COMPANY
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Got a Real Tough Starting Problem ?



Single-phase Type RA ½ to 15 hp.

Wagner Repulsion-Start Induction Motors start heavy loads with low current

The Wagner Type RA is the work-horse of the single-phase motor field. It combines high starting torque for quick, easy starts with low starting current and minimum light flicker. It has a constant high operating speed, even under overload, and a flat efficiency curve over a wide operating range.

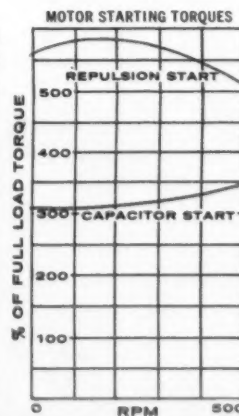
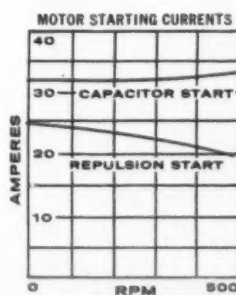
You practically eliminate service problems when you power tough single-phase applications with Wagner RA Motors. They have unmatched ability to start high inertia or heavy friction loads repeatedly and they give many years of unfailing service.

Let a Wagner Sales Engineer show you how these motors can be applied to your needs. Call the nearest branch office or write for Bulletin MU-220.

Wagner Electric Corporation

6400 Plymouth Ave., St. Louis 14, Mo.
BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

GET MORE STARTING TORQUE WITH THE SAME HORSEPOWER



ONE HP, 1750 RPM, 60 CYCLES, 230 VOLTS

Integral Ratings, 1-5 hp are available in the latest NEMA Frame Sizes

H. P.	OLD FRAME SIZE	PRESENT FRAME SIZE
1	203	182
1½	204	184
2	224	213
3	225	215
5	254	254U

4 pole (1750 RPM, 60 cycle and 1450 RPM, 50 cycle) ratings are interchangeable in mounting dimensions with capacitor start motors of the same ratings.

Got a Normal Starting Application?



Single-phase
Type RK
1/6 through 5 hp.

WAGNER CAPACITOR-START MOTORS provide dependable starts... long troublefree life

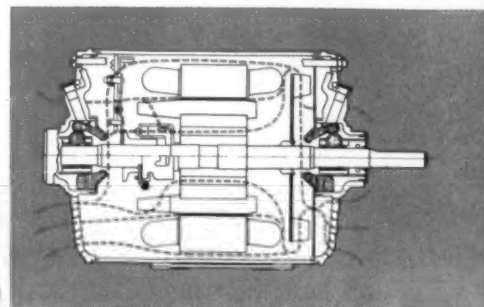
Here's the single-phase general purpose motor that gives more horsepower with less bulk—is rugged enough to permit direct mounting, compact enough to fit in tight spots. Available with sleeve or ball bearings—with rigid bases or with resilient mountings for exceptionally quiet operation.

ALL-ANGLE OPERATION

The sleeve bearing design in fractional hp ratings, has a positive lubrication system that permits operation in any position. All angle mounting can mean important savings in initial costs to manufacturers—can help the design engineer in a tight spot. You can get these motors from leading motor distributors in your community and from Wagner Sales Offices in 32 principal cities. Your Wagner Sales Engineer will be glad to help you select the right motor for your application. Wagner Bulletin MU-217 gives full details.

Wagner Electric Corporation

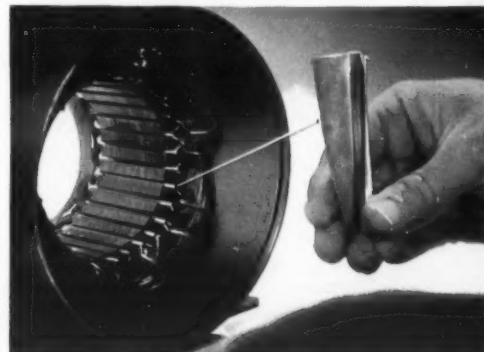
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BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES



EFFICIENT COOLING SYSTEM—The improved ventilating system used in these motors directs a large volume of air through the motor to effectively reduce temperatures and add to motor life. Cross section above indicates direction of air flow.



QUICK BREAK SWITCH—The starting winding and capacitor are disconnected from the line by this Wagner Switch—test-proved to make more than a million makes and breaks... the equivalent of two starts per hour for 50 years.



MYLAR® INSULATION—Mylar-paper laminated slot insulation gives top protection against moisture, adds thermal stability, to give more application versatility and longer life when unexpected overloads occur.

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WAGNER "48" SPLIT PHASE MOTORS... 1/6, 1/4, 1/3 hp.



for low
starting
torque
requirements

If you need a small fractional horsepower motor for use on fans and blowers or on a wide variety of easy-to-start machines and appliances, you can't beat the Wagner "48" Type RB Motor. It offers all the advantages of the Type RK described above, with the exception of high torque capacitor starting. This smaller, lighter, limited use motor can solve many application problems economically.

WN58-6

Flexible Dealing Important In Export Sales

Parts Manufacturer Will Work with Commissioned Agent, License Local Producer, or Utilize Stocking Jobber

PORT HURON, Mich.—“African and Middle and Far East activity in air conditioning and refrigeration is a major factor in our increasingly healthy export sales of tubing, valves, fittings, and the like,” reports Frank M. Conroy, export sales manager, Mueller Brass Co.

“The need of foreign exchange to finance imports has resulted in government-financed tourist bureaus who have sponsored modern air conditioned hotels equipped with modern refrigeration equipment,” he explained. “Government-sponsored hospital construction programs are extensive.”

Keeping abreast of this activity and maintaining flexibility in its dealings with foreign countries, Mueller Brass has been able to increase steadily its sales of copper tube, fittings, valves, driers, and sundry parts which go into refrigerating and air conditioning installations.

Exports are 30% over last year, according to the company.

Flexible Dealing Defined

“When we speak of flexibility,” Conroy continued, “we mean that a company must be able to deal with countries in any one of several ways. We work with commissioned agents, with stocking jobbers, on a royalty basis—whichever seems best under specific circumstances.”

If a foreign company is equipped to make products similar to those being considered, Mueller Brass will license the company to produce such items as solder fittings. F. L. Hudson Co., Ltd., Brisbane, Australia, is one example. Others are in Sweden, Switzerland, Argentina, Chile, and Mexico.

In Venezuela, a stocking jobber is set up. Similar setup exists in Puerto Rico and Cuba.

Most countries not in the Soviet bloc are handled by commissioned agents.

“In this area, South Africa is the best potential market for the near future, even in the face of strong British and German competition,” Conroy predicts. Conroy has just returned from an extended trip on that continent. “Morocco was a good market,” he recalls, “but some 7,500 European families have left; several thousand more are leaving; and the new native owners do not as yet possess the know-how needed to conduct the French-deserted businesses.”

Political Instability

Must Be Watched Closely

In fact, political instability is something which must be watched closely, Mueller Brass finds, since transactions can be endangered if a change in government occurs. “This makes long-range terms and planning impractical in many areas.”

Asked by the News how it is that American firms can sell copper tube abroad when in this country they are having difficulty competing with German, British, and Japanese imports, Conroy answered that European

tube is normally supplied in only approximate inch sizes—using millimeter dies. Further, the quality of the tube in many cases does not correspond to American standards for refrigeration installations.

“These millimeter sizes almost, but not quite provide the accurate capillary opening need-

ed to produce good soldered joints with American fittings. As a result,” Conroy continued, “we find that—in Peru, for example, where they recently had a wave of hospital building—our tube and fittings will be specified for the entire hospital.

“Normal foreign practice is to weld, braze, or thread joints,”

he explained. “Therefore, the popularity of the Mueller Brass-invented soldered fittings.”

Discussing copper tube competition abroad, Wayne Woolman, assistant export manager, pointed out that “surprisingly” the major competition in many areas is from Canadian tube. “Canadian tube, delivered at the foreign port, frequently sells at less than our manufacturing costs.”

Looking over the world, Mueller Brass finds Latin America the largest present market; very good refrigeration business in Mexico.

Egypt and the Near East are good markets, as are India, Thailand, Hong Kong, Singapore.

“Europe is hard to get into because of the proximity of competition and because of the difficult dollar exchange in Sterling areas. This latter difficulty also causes concern in Australia and New Zealand.

“We cultivate many little markets,” Mueller Brass explained, “since it has been our experience that these markets hold fairly steady and give us the backing from which to shoot for the bigger stuff.”

COMPLETELY NON-CORROSIVE. More than 99% of PA 400® Silica Gel is inert, amorphous silica. This silica removes moisture by physical adsorption instead of chemical reaction. PA 400 will not dissolve in the refrigerant or react with oil or water in any way. *It won't cause corrosion.* So ask for the drier filled with PA 400. Both you and your customers will be happy you did. See your distributor tomorrow.

W.R. GRACE & CO.
DAVISON CHEMICAL DIVISION
BALTIMORE 8, MARYLAND



Australian Air Conditioning Has Bright Future; Climate Is Ideal for Heat Pump, Says Colyer

SYDNEY, Australia—Air conditioning in Australia presents bright future prospects, even though a steady climb in sales may falter at times because of dips in new construction, declared E. W. Colyer, chief engineer, Carrier Air Conditioning, Ltd., Sydney, in speaking before the Australian Institute of Refrigeration convention here in May.

Although the U. S. "had about a 10-year start on us in air conditioning," Colyer said that Australia has rapidly caught up in terms of products and techniques applied. American assistance in design and installation engineering was acknowledged by the speaker.

Components Were Hard To Get

Tracing some of the milestones in the industry's history, Colyer made these points:

"In the early stages of the industry's development, as at the present time, dollars were hard to get and many components had to be made by the contractor. It was impossible to buy them at the down-town refrigeration store. Filters, coils, fans, outlets, and even controls were manufactured, in contrast with the operation of the American contractor who could readily buy these items from an outside supplier.

"In fact, we were soon making a greater range of components than our American principals.

"For the first five years following the war, material shortages and building restrictions made progress slow and sales mainly came from industrial activity, especially the textile trade.

"Heat pump installations made their appearance in 1947, and although progress has been slow, a considerable knowledge has been accumulated.

"In the early 50's it became obvious that a big building program was about to start. A wave of air conditioning requirements was created that swamped the capacity of the industry to meet. It is still gasping for breath.

Sees Slowdown as Healthy

"Right now, sales figures are down and a breathing space is in front of us, allowing us to consolidate our position and to clean up some of the untidy items the rush and scramble inevitably produced. This is a good thing and essential for the well-being of the industry, as it is quite apparent that another summation of major projects is already on the horizon.

"Air conditioning seems to have a typical Australian complex. There is either a drought or a flood of business at any one time."

Colyer showed a "progress chart" on the air conditioning industry, which showed that present sales of air conditioning equipment were about four times what they were in 1948; factory floor area about the same proportion; and the number of employees in the industry about twice the 1948 figure.

"Self-contained or unitary conditioners are becoming more popular, and as the smaller market grows it must have a stabilizing effect upon variations from the larger contracts help-

ing to smooth out the over-all curve," Colyer said.

"These self-contained units are being built up to 6,000 c.f.m. and 20-hp. refrigeration capacities right down to the 1/2-hp. window unit.

"The Australian climate is ideal for the heat pump application," Colyer commented. "Usually a plant sized for cooling is ample for the heating requirements and the heat thus gained is at a cost equivalent to the light fuel oils. It is in the interest of Australian economy to burn coal or use hydro-electric power rather than imported fuel oils. The heat pump enables us to do this by using power generated from our own resources."

Some of the Australian speaker's most interesting comments related to present-day architectural and construction practices as they related to air conditioning:

Architectural Trends Favor Air Conditioning

"The architect has really helped to put air conditioning on its feet, not only in Australia but in other parts of the world. If not the architect it must be the glass salesman. Some of the recently constructed buildings are virtually a frame sheathed in glass. Without air conditioning habitation would be almost impossible.

"Also, the architect, or again it might be the illumination salesman, cause higher and higher lighting intensities to be employed. Flush lighting limits the utilization of illumination and more power must be poured in to produce equivalent results, with the result that cooling re-

quirements increase.

"The fad for huge glass areas might be good for business, but in my opinion that particular situation has gone past common sense. Each sunlit square foot of glass costs the owner additional in his purchase price for air conditioning, and he pays forever the additional operating cost.

"The large glass areas have added to the thermal instability making the air conditioning control difficult and the air conditioning man is not entirely happy. Coupled with the thermal instability in the radiant heat effect, for even with the aids of heat-absorbent glass, double glazing, and venetian blinds, air conditioning cannot remove the direct radiation from a large heated surface. It can only be compensated by a reduced room air temperature representing more cost, more difficulty in control, because an

(Concluded on next page)

USE COMPOUND AND HEAD GAUGES
When charging refrigerants into any system, always use a compound and head gauge. Use of the head gauge in the discharge service valve port may:

- 1) Prevent overcharging the system.
- 2) Avoid damaging water-cooled condensers beyond repair, due to hydraulic action of liquid refrigerant in the condenser following the water tube.
- 3) Reduce time, labor costs, and unnecessary loss of "Genetron" refrigerant.
- 4) Eliminate guess work when liquid indicators continue to show bubbles.
- 5) Help to avoid personal injury to the service mechanic.
- 6) Aid in detecting a partially restricted drier.
- 7) Indicate non-condensables in system after system is properly charged with "Genetron" refrigerant.

HOW TO DETERMINE PRESSURE DROP IN WATER CHILLERS AND CONDENSERS
Often manufacturer specifications on water chillers or water cooled condensers contain the pressure drop for a given G. P. M. flow through the equipment, but the G. P. M. required may be a little less or more than shown in the data sheet. Calculation of the pressure drop according to the G. P. M. required then becomes necessary.

SERVICE TIP OF THE MONTH
COPPER CORROSION
Copper water pipe has been used for centuries, without trouble, when buried in sand or clay free of acids. However, when the soil is acidic, the copper pipe will corrode and eventually fail. To prevent this, place a zinc anode in the soil near the pipe. The zinc will corrode instead of the copper. As an alternative for copper tubing in the condenser, place the lines in a sand bed. As an alternative for copper tubing in the condenser, place the lines in a sand bed.

OIL COLOR AS A MOISTURE INDICATOR
With the use of two 2-oz. clear glass bottles, a visual comparative inspection of samples of oil may be made. After 30 to 40 days' operation of a field-installed refrigeration system, compare the color of a particular type of fresh oil with a sample of the same oil removed from a compressor crankcase. If the oil is discolored, tending toward a reddish brown or black, the discoloration may indicate the cause is moisture reacting with the refrigerant and oil.
To correct the condition of possible moisture, change the oil in the compressor, install a larger over-sized drier in the liquid line and recheck the color of the oil within 30 to 40 days. If you have no leaks in the system, the application of the system is proper, and you are using the oil recommended by the machine manufacturer, one to three changes of oil and sufficient sized driers should remove the moisture and acids from the system, and the oil should remain relatively clear thereafter.

EXPANSION VALVE TEST PRESSURES
In the past some manufacturers of diaphragm expansion valves have recommended installing the valve from the low side, and by-passing it with a connecting line before leaving a field installed system for leaks. If the high or low side of the diaphragm would be subjected to test pressures over 200 P.S.I.G., a gradual increase in permissible test pressures has taken place among many of the valve manufacturers to a point where SOME TYPES of diaphragm expansion valves will now withstand test pressures of 375 P.S.I.G.
You may find this same information in the literature of the manufacturer.

LEAKS IN REFRIGERANT LINES
Ed said to Cy, "I understand you seldom experience leaks in systems you install, how come?" "That's right," said Cy, "but I had to learn how to install and test refrigerant lines properly." Continuing, Cy said, "A few years ago I saw in a survey that leaks in systems cause the greatest number of service calls, so I decided to be more careful in making a joint and testing for leaks. I add sufficient Genetron 12 to the system to raise the pressure to about 20 P.S.I.G., then add sufficient dry nitrogen to bring the pressure to 230 P.S.I.G. For Genetron 22, test pressures for lines should be 300 P.S.I.G. These pressures plus a helium leak detector, help me find leaks. Then I make repairs and retest the system or starting a new system. That way I'm sure of a good job and the reputation you heard of. You can see why I'm so sure of a good job."

HERMETIC MOTOR PROTECTION
"When Gus wires a job, we never have a motor burned," Bob said. "Can't say that about a lot of other electricians. Why is it?" Ed replied, "I got the answer for that one from Jones, an engineer with our local electric company. He said that even though all three-phase motor circuits require such as generally equipped with proper heater protection, Gus's circuits are generally equipped with proper heater protection, Gus's circuits are generally equipped with proper heater protection, Gus's circuits are generally equipped with proper heater protection."

GALVANIC VS. ELECTROLYTIC ACTION
What's the difference? Strange as it may seem, both terms are synonymous. By definition, "Electrolysis" is the process in which an electric current is used through a solution, causing simultaneous chemical changes either in the electrolyte or in the solution (electrolyte) in contact with the electrodes, or in both. Electroplating, electrorefining, and the production of caustic and gaseous hydrogen and chlorine from ordinary table salt are examples of this process.
"Galvanic" or "Electrolytic Corrosion," on the other hand, is the reverse of the above phenomenon. In this case, two dissimilar metals are brought into contact in an electrolyte (such as a water solution of a salt) to produce a current and a rapid decomposition of one of the metals. Galvanic corrosion is prevalent wherever steel and aluminum are in contact.

SERVICE TIP OF THE MONTH
USING DRY NITROGEN FOR TEST
Joe asked Bill, "What will you use to test our new refrigeration coils?" "Are there different ones there?" "Yes, there are."

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PRINTED IN U.S.A.

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Safely supports hanging pipes, conduits and cables up to 500 lbs. 1/4 in. 20 gauge electro-galvanized steel. 1/4 in. holes on 1/2 in. centers. Various lengths available. Send for literature.

MINERALLAC ELECTRIC COMPANY
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Bright Future for Australia --

(Concluded from preceding page) occupant shaded from the radiant effect will be too cold.

"Glare also affects the occupant and the outcome is complaint.

"The occupant usually has had no say in the architecture of the building and blames the air conditioning contractor for all his troubles.

Engineers Have Been Ignored

"I feel that the consulting engineer and the air conditioning engineer has not been strong enough in insisting that his advice be taken by the architect. We frequently see ductwork of such extraordinary configuration that the result is virtually no air at the far end.

"It is not easy to dictate to the architect, as the architect is basically the purchaser's repre-

sentative and the old business law that the costumer is always right intervenes.

"This also applies to a large degree when the problem of equipment layout is considered. The air conditioning space requirements are much more nebulous than, say, the requirements for elevators or escalators, the latter being reasonably obvious and easy to forecast.

"The obvious place for air conditioning plant rooms is at the center of gravity of the corresponding conditioned area, but with ready access to outside air.

"It always happens, however, that the air conditioning equipment is pushed into an inaccessible spot in the basement or some other spot where its inherent noise level causes complaint by the tenants or the people next door."

Air Conditioning In Latin America:

Igloos, Race Horses, Copper Mines, Warehouses, Hospitals Need It



SELLING refrigerators to the Eskimos is probably harder than selling air conditioning for an igloo especially when the igloo is located in the tropics as these are.



EACH igloo is a separate clean air conditioned office offering the maximum in privacy, comfort, and convenience. Heat, dust, and excess moisture are no problem here.

DETROIT — "We believe the future for our industry is very bright in Latin America," Ken Crapeau, special products manager for the export division of Chrysler Corp., said recently.

"We may have to establish assembly, or maybe manufacturing plants there in order to supply the demand. Most progressive producers of refrigeration and air conditioning equipment are giving serious consideration to doing what is necessary to keep the current boom going," he said.

Crapeau noted that every day he receives interesting requests to solve problems that are easy and relatively economical to solve with the proper selection of correct equipment. Here are some choice examples that illustrate variety of applications:

In Panama a resourceful architect and builder designed and built a series of domed type individual office suites. These "igloos" would have been untenable, under the tropic sun, without air conditioning.

Air Conditioned Sick Bay for Horses

In another Latin American city a wealthy owner of a stable of fine race horses was finding it difficult to keep his horses in good condition. Their recovery from slight disturbances was taking too long and keeping these horses off the track. A well air conditioned "sick bay" in the stables solved the problem to the delight of all, including the veterinarian and the stable boys.

In Ecuador the military has found it mandatory to control humidities in the warehouses where their supplies are stored. Air conditioning has proven the answer since it not only prolongs the shelf-life of the material but it also improves the moral of the men charged with maintaining these stocks.

Copper Mine Infirmary Suffered from Fumes

In Peru a copper mining company had a problem during certain seasons of the year. Their infirmary was located in a valley where prevailing winds carried smelter fumes into the hospital wards causing sick patients to grow sicker from inhaling corrosive fumes and gases.

In Barranquilla, Colombia, a wealthy coffee producer and processor found his office employees suffering from continued cases of "jitters." By tightly sealing the office area from outside air infiltration and the proper use of air conditioning and filtering, it was found that absenteeism was reduced and general personnel problems disappeared.

In the hospitals throughout Latin America refrigeration and/or air conditioning is playing many new and strange roles. Labor rooms. Delivery rooms, premature incubators, Anesthesia for minor operations. Treatment for swellings. Preservation of foods. Pre-preparation of special diets. Garbage storage. For asthma, hay fever, and other respiratory infections.

All good hotels in Latin America are air conditioned.

DOES EACH MONTH

BRING YOU THESE

VALUABLE "SERVICE TIPS"?

The "Service Tip of the Month" is free . . . and each "Tip" brings you the kind of practical information that's really hard to come by. This isn't textbook information. It comes straight from experience. Just one "Tip" you didn't know about can save you time and trouble . . . and they'll all help you do a better job.

How do you get your free "Service Tip of the Month"?

Just ask your wholesaler!

These Service Tips are offered by the producer of Genetron® Super-Dry Refrigerants as an industry-wide educational service. Your wholesaler will be glad to see that you get your copy each month.

GENERAL CHEMICAL DIVISION

40 Rector Street, New York 6, N. Y.

Allied
Chemical

Foreign Home Refrigerator Producers Could Match U. S. Output This Year

DETROIT—Add electric household refrigerators to the growing list of items, once American "specialties," in which the United States is now being overtaken by the rest of the world.

Full recovery of the industrial centers of western Europe, coupled with improved economic conditions abroad and increased demand, are altering the competitive balance, according to Bernard A. Chapman, executive vice president of American Motors Corp. in charge of the company's worldwide appliance operations.

"While the United States still remains far and away the largest single refrigerator-manufacturing country with output for 1958 running at a pace of about three million per year," Chapman said, "total production throughout the rest of the world has increased to a going rate that could exceed three million this year."

Chapman said the leading foreign producer currently is revived West Germany, with output last year of some 700,000 units, and the possibility this year of reaching the one-million mark.

"Other leading producers in approximate order of rank are Canada, France, Italy, United Kingdom, Australia, Brazil, Japan, U.S.S.R., Argentina, New Zealand, Mexico, South Africa, and Spain. Sweden for many years has been a leading producer of electric and gas-operated absorption refrigerators."

Chapman said the rapid growth of worldwide markets had important implications for Kelvinator's own business, since the year 1958 may see more Kelvinator refrigerators sold outside the United States than within the home market, for the

first time in the company's 44-year history.

He said Kelvinator's worldwide organization has seen its greatest period of growth during the past five years. This growth, he said, has been in five main areas:

1. Increase of 40% in export sales from the States.
2. Canadian sales increase of 26%.
3. Forty per cent increase in export sales from England.
4. A "spectacular" increase of more than 200% in English sales to the British home market during the current year.
5. Addition of new licensees and opening of new markets closed to U. S.-built products because of dollar shortages, import restrictions, or more competitive local manufacture.

Chapman stated that although no country matches U. S. consumption of refrigerators, "there

are nevertheless about a dozen major countries whose home consumption of refrigerators is in the neighborhood of a substantial 100,000 units a year.

"In most of these major markets, Kelvinator is represented by a strong licensee or manufacturing subsidiary."

Chapman said Kelvinator's overseas operations had their beginnings in the period between the two World Wars, and included the opening of manufacture in Canada, England, Australia, and New Zealand. The organization now includes subsidiaries in Canada, England (which exports to much of the sterling area), and licensees in 13 other countries.

Responsibility for the coordination of expanding worldwide appliance operations was centralized a year ago with the formation of Kelvinator International Corp. as a subsidiary of American Motors.

Chapman said he anticipates the heaviest Kelvinator expansion during the next five years in such countries as France, Italy, Germany, and Mexico, where such factors as availability of electric power, product acceptance, and strong new licensee firms augur well.

Chapman pointed out that the causes of the great increase in demand for the U. S.-type consumer goods abroad are the same that prompted the growth of the appliance industry in the U. S. during the past 30 years—increasing availability of electric power, availability of useful new products with low market "saturation."

American 'Missionaries' Spark Local Interest

However, a contributory factor has been the "missionary" work done by American servicemen and civilians on extended assignment abroad, he said.

"The Middle East, site of whole communities of American oil company employees, and the North African countries where U. S. air bases have been built, have become appliance markets of growing importance coincidentally with the influx of Western families.

"Initially some of the demand for appliances has simply been to supply the needs of the American families themselves, but the exposure to U. S. living comforts has left behind a desire for these conveniences.

"Oil-rich Iran now purchases more U. S. refrigerators than cosmopolitan Hawaii. Morocco, Libya, and French West Africa all have stepped up imports of refrigerators."

NOW...FROM REMCO

MOLECULAR SIEVE FILTER-DRIERS

WITH DEPTH FILTRATION

Utilizing advanced design Molecular Sieve cartridges, these new Remco Filter-Driers combine unequalled drying efficiency, effective acid removal, generous flow capacity and depth filtration. The massive depth filter completely removes all scale, sludge, carbon and other particles as small as 100 microns, without affecting flow or pressure drop. In addition, there's a fine mesh outlet screen.

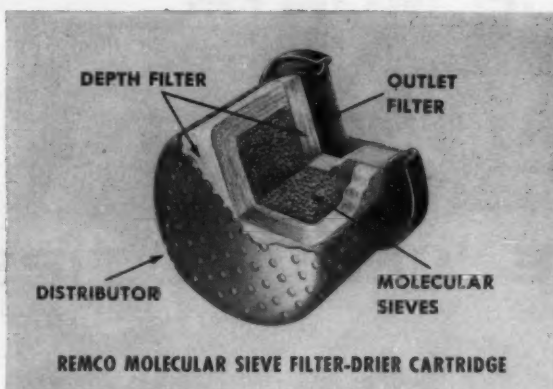
Large quantities of moisture are adsorbed and retained even at refrigerant temperatures of 140 F. Moisture concentrations are held to 10 p.p.m. or less, and acids reduced far below dangerous corrosion limits. Refrigerant and oil are not adsorbed.

Compact in size, Remco Molecular Sieve Filter-Driers are great space savers and work equally well in the hot machine compartment, the refrigerated space, or a hot equipment room. U/L Approved, the working pressure is 500 p.s.i.; minimum bursting pressure, 2500 p.s.i. The filter-driers may be used for Refrigerants 12 or 22, Carrene, or methyl chloride.

REPLACEABLE CARTRIDGE TYPE units come in 3 basic sizes and have a single cartridge which can be easily installed or replaced. An "O" ring provides a positive, leakproof flange seal. From 3 to 40 tons with $\frac{3}{8}$ " thru $1\frac{1}{2}$ " sweat connections.

SEALED TYPE filter-driers are available in 4 basic sizes, 1 to 12 tons, with $\frac{1}{4}$ " thru $\frac{3}{8}$ " flare and $\frac{3}{8}$ " thru $\frac{7}{8}$ " sweat connections.

"T" FITTING TYPE supplied in 2 basic sizes, 2 to 6 tons, bring all the advantages of Remco Molecular Sieve Filter-Driers to systems having standard "T" fittings.



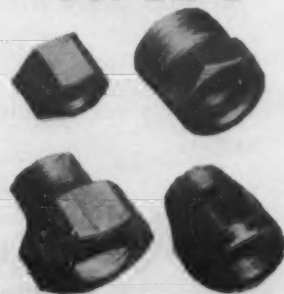
Remco Filter-Driers are available at leading wholesalers everywhere. Ask your wholesaler for more information, or write for Bulletin MS-1. Remco, Inc., Zelienople, Pa.

REMCO

MANUFACTURERS OF ADVANCED REFRIGERATION PRODUCTS
FILTER-DRIERS • LIQUID INDICATORS • RECEIVER-DRIERS
CHECK VALVES • SAFETY DEVICES • FROST-TITE FLARE NUTS



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Cadmium Plated — Long & Short
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Superior Product, Better Price, Fast, Reliable Service Are Needed To Gain World Market

WEST HARTFORD, Conn.— "If the globe is his market, a manufacturer should be prepared to meet domestic and foreign competition with products that are superior in quality and price, and with service that's fast and reliable," declares C. L. Babin, export manager for Dunham-Bush, Inc.

Dunham-Bush equipment is manufactured and/or sold throughout the free world, he said. Licensed manufacturing operations are carried on in Australia, England, India, and Brazil. Dunham-Bush operates complete plants in Canada and England to assure proper service to the enormously increasing foreign market.

Rapid expansion of the Dunham-Bush export division in some measure reflects the recent rapid growth of the entire organization.

In 1955, Babin was the export division. Since that time, the number of department personnel has increased to eight. The department is housed in a separate office on South St. here.

Last April, the export department assumed complete responsibility for export sales of the Brunner Div. at Utica, N. Y. and the Brunner Co. at Gainesville, Ga. in addition to sales of the company's other divisions.

Key positions in the department are held by Ralph Tarasco, assistant export manager, and Eduardo Del Camp, application engineer.

LATIN AMERICAN MARKET PARTICULARLY RICH

Because Latin America is ideally suited to air conditioning and other types of cooling and refrigeration equipment, this market is particularly rich for Dunham-Bush, Babin said.

In Colombia for example, an air conditioning system which is 100% Dunham-Bush services the newest, most modern government tourist hotel. Huge air handling units designed to deliver air conditioning to meet any seasonal demand, and Brunner condensing units make up the system.

The same kind of equipment assures many of Colombia's leading banks and other financial institutions of comfortable atmospheric conditions.

In Mexico and Cuba many of the newest hospitals and clinics are completely served by Dunham-Bush heating and cooling products.

At the Hospital Civil de Santiago de Cuba, an extensive climatic network of Dunham-Bush units is at work; two large Heat-X package chillers; 28 air handling units ranging in capacities from one to five tons; air-cooled condensers, capacities five to 10 tons; and two centrifugal pumps.

This equipment services five operation rooms, several labor rooms, 14 recovery rooms, and a doctor's dressing room, besides other areas. Specifically, it combines to produce and supply chilled water to the hospital's huge air conditioning and cooling system.

Two other outstanding Dunham-Bush installations are at

Infantil de Santiago de Cuba and the Ondi hospital, both of Havana. Both of these are serviced by cooling systems completely made up of Dunham-Bush, Brunner, and Heat-X products.

Some other impressive foreign installations include 17 air conditioning units, evaporative condensers, and package chillers in a new, modern cold storage plant, Beirut, Lebanon; and several water chillers and eva-

porative condensers at a large new technical training school, Lucerne, Switzerland.

GOODWILL MUST BE EARNED

"The goodwill on which continued success of export sales depends cannot be bought," states Babin, "it must be earned through continual personal contact, high quality products at a good price, and prompt, effective service."

"Latin America has its version of the Open Door Policy, but smart American manufacturers don't force their way through it."

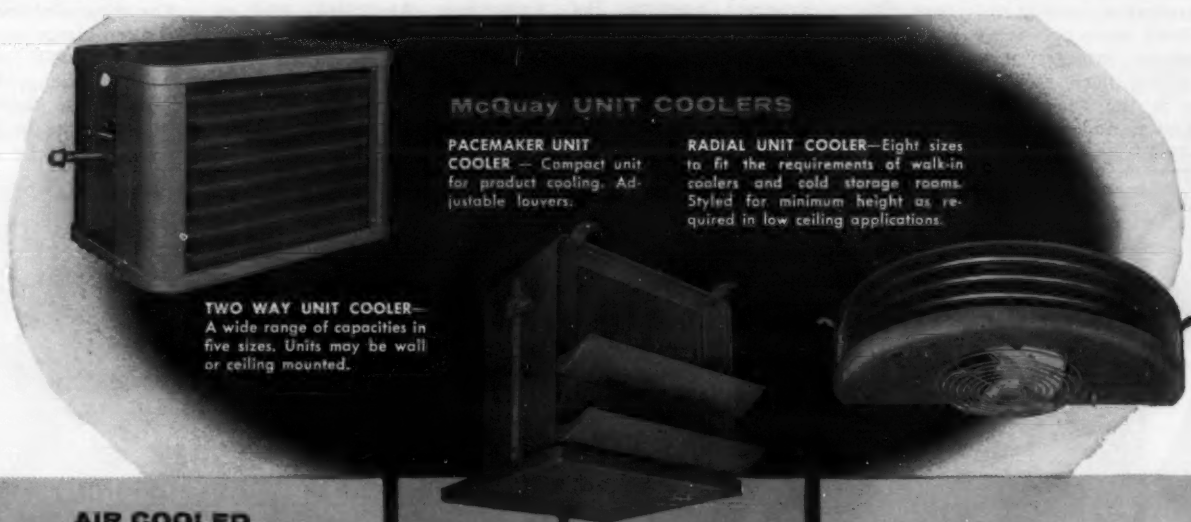
"Despite reports to the contrary, several leading Latin American countries have maintained an important scrupulous respect for the principle of free markets, and they have adopted policies to encourage both domestic and foreign capital investment."

"Most of these countries are making sure advances toward economic well-being, and American companies with well-established reputations are in a position to benefit from this promising market."

40 Air Conditioned Villas Being Built On Outskirts of Rome

ROME, Italy — A project of 40 new air conditioned villas are being constructed outside Rome, reports Conte Iacopo Marcello, architect on the project. It should be completed in 1960, the Venetian Marcello declared.

Marcello indicated that there is a need for room air conditioners and residential cooling in Italy, particularly in the south. Northerners, however, don't feel they need it, except for process air conditioning in industry, he said.



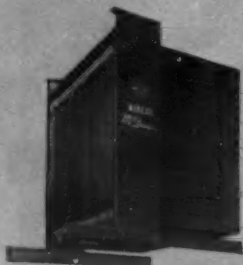
McQuay UNIT COOLERS

PACEMAKER UNIT COOLER — Compact unit for product cooling. Adjustable louvers.

RADIAL UNIT COOLER — Eight sizes to fit the requirements of walk-in coolers and cold storage rooms. Styled for minimum height as required in low ceiling applications.

TWO WAY UNIT COOLER — A wide range of capacities in five sizes. Units may be wall or ceiling mounted.

AIR COOLED CONDENSERS



MODEL "AD" AIRCON — 2, 3 and 5 ton remote type air cooled condensers with direct driven propeller fans.



MODEL "AR" AIRCON — Remote type residential condensers using centrifugal blowers. Available in 2, 3, 5 and 7½ ton nominal capacities.

MODEL "AB" AIRCON — Remote, waterless condensers available in eight sizes—9, 11, 15, 20, 25, 30, 40 and 50 ton nominal capacities.



the NEW SPACE MISER

Another FIRST by

McQuay



Three high temperature models for reach-in refrigerators. Minimum space, attractive grained aluminum cabinets, ease of installation are featured. Three low temperature models for reach-in freezers are fabricated from grained aluminum and equipped with built-in heat exchangers. Designed for economical hot gas defrosting with de-icer coil bonded to concealed drain pan.

RESIDENTIAL EVAPORATORS



VERTICAL AIR FLOW — Available in 2, 3, 4, 5 and 7½ ton nominal capacities. Designed to mount above or below warm air furnaces.



HORIZONTAL AIR FLOW — Available in 2, 3, 4, 5 and 7½ ton nominal capacities. Designed to mount in horizontal duct work.

McQuay INC.
MINNEAPOLIS 13, MINNESOTA
AIR CONDITIONING • HEATING • REFRIGERATION



McQuay Means Quality

McQuay units feature the exclusive McQuay Ripple Fin coil construction which creates the maximum air turbulence necessary to obtain efficient heat transfer. This coil construction also features wide full fin collars which act as automatic spacers, completely covering the tube to form a "tube within a tube".



AROUND THE WORLD IN 50 DAYS

"Inside Dope" by GEORGE F. TAUBENECK



(Continued from Page 1, Col. 1)

was more enjoyable. It was our first time around the track. There were breathing-spells on ships and trains to sleep and recuperate between visits to the various nations and peoples.

There was also opportunity to write unhurriedly about what we'd seen and heard.

Moreover, we not only had more time in each place to savor it; but were much younger, more impressionable, tireless, and less addicted to comfort.

This recent seven-weeks circumnavigation, nonetheless, may have been more exciting.

Reasons: interesting changes had taken place almost everywhere in the double-decade interregnum, and friendships unexpectedly were renewed with

grand persons abroad whom we'd really never hoped to meet again, ever.

That 1937 journey took us through Hawaii, Samoa, Fiji, Australia, New Guinea, Indonesia, Malaya, Burma, India, Arabia, Egypt, Palestine, Italy, Spain, France, Monaco, Switzerland, Austria, Hungary, Germany, Denmark, Sweden, the Netherlands, and England.

This time we covered Hawaii, Fiji, Australia, Indonesia, Malaya, Siam, Pakistan, Tehran, Saudi Arabia, Lebanon, Turkey, Spain, France, Germany, Belgium, England, and Iceland.

That's moving about as far north and south on the globe as you can manage (while going around it) and still meet businessmen.

Let's Make It the 50th State

From both trips one solid impression remains intact: Hawaii is the loveliest, the most benign spot on the globe. If we could choose but one place to revisit, "dis must be de place."

Home is where the heart is, naturally. Any normal fella wants to live where his family, job-connections, and personal friends from 'way back reside. To an American, that's America; to the Frenchman, Paris; to an Australian, Austrilya, and so on.

Everywhere on this quick tour of the world we met professional globetrotters—salesmen, engineers, and government career men—who agree that

there's no place like home, wherever it may be. However, we asked all of them:

"Next to your home, where would you like to live, if you had a choice?"

Some answered, "Paris, of course." Others chose New York City, San Francisco, Singapore, Rome, or occasionally some remote spot in Spain or among the Carribbean isles.

But not those who've had the good fortune to while awhile in Honolulu. They are unanimous in declaring: Hawaii is the jewel in our Good Earth's crown.

Beauty Queens of the World

For sheer elegance of environment, for sumptuous boulevards, succulent food, and gracious modes of living, Paris is unmatched. La Balle Paree has been described in such rapture and so often by more poetic

pens than ours that we'll "leave it lie."

Australia normally isn't listed as a popular tourist attraction. Should be, though. Munificent climate, radiantly healthy people on the go—all Australia has a youthful vitality which is invigorating in itself. Terrific scenery, too.

Sydney's harbor thunder-strikes a visitor; Melbourne is a total garden; Adelaide is symmetrically surprising—and away we go.

Singapore—most cosmopolitan of cities, where there's adventure around every corner—is an education in itself. You can, in effect, tour the world in terms of varieties of peoples right there.

Bangkok, Istanbul, Rome, Barcelona, Monte Carlo, Copenhagen, Stockholm, London—all have special charms and recommendations.

We'll still take Honolulu. Or would, if we could.

People Are Wonderful Everywhere

When you get right down to fundamentals, the most rewarding facet of travel abroad isn't scenery, museums, tribal dances, exotic foods, colorful costumes, unusual customs, or occasional brushes with danger.

It's people. They're wonderful everywhere. Helpful, kind, essentially decent and hospitable (sometimes to the point of well-meant suffocation) they are the real prizes to the man who trades comfort for stimulation via travel.

Earlier in this sum-upping it was mentioned that reunions with friends gained 21 years ago in such diverse places as Hawaii, Australia, Singapore, and France were the happiest moments of our 1958 circumnavigation. That is quite true. It was like two dozen Silver Anniversary college reunions rolled into one.

New friends gathered were pleasurable, too. Honestly, we didn't encounter a single person anywhere, the entire length and breadth and roundth of our minor planet, who wasn't essentially a good Joe or Jane.

They might be critical of the U.S.A., but always they were decent and helpful.

In Paris one sunny afternoon we lunched in a tiny 148-year-old Montmartre restaurant (La Mere Catherine) with two Frenchmen who couldn't speak English, and a Viet Nammese engineer who had learned his "American" from Australians in a Japanese war-prisoner camp.

Communication was difficult, as you can imagine. But this judgment did come through: Perennial political crises in France seldom affect business or life's pleasures.

At this particular moment Algeria and Corsica were in revolt, Premiere Flimflam (or whatever his name was), had abdicated, De Gaulle was posturing in the wings, and civil war was said to be a possibility.

"The politicians go their way," translated the bright young engineer from Viet Nam, "and we go ours. We pay no attention to them."

Somewhat we feel that this succinct aphorism is a key to (Concluded on next page)

International Division

BASIC EQUIPMENT COMPONENTS AND ACCESSORIES

Acme Industries, Inc.

Oil Separators, Liquid Chillers, Cooling Towers, Evaporative Condensers, Ammonia & Freon Condensers, Heat Pumps, Remote Room Conditioners, Multi-zone Conditioners

Alco Valve Co.

Control Valves

Copeland Refrigeration Corp.

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AROUND THE WORLD IN 50 DAYS

"Inside Dope"
by GEORGE F.
TAUBENECK

(Concluded from preceding page)
world peace, if it could be worked out on a grand scale.

People everywhere are good folk. Kind folk. Peace loving. It's the posturing, power-mad politicians who stir up trouble. Maybe if we'd ignore them (a Fate worse than death for self-dramatizing demagogues) and shame them there'd be Peace in our time, and even for all time.

Big idea is this: take the Pomp out of Politics.

If we'd quit kowtowing and genuflecting to the so-and-sos their egos would deflate to the point where they'd no longer dream of new worlds to conquer.

Is a Suicidal War Inevitable?

Everywhere we went around the world, and ever since our return home, almost everybody has asked ONE significant question: "How can we avoid or prevent another World War? Doesn't anyone anywhere have a clue or two?"

"Is there any hope of Peace—considering the inborn greedy and jealous instincts of human nature, and mankind's previous history of one war after another?"

Obviously nobody, particularly "Dope," can provide a pat answer. However, we did hear this line of reasoning from several thoughtful people in many lands:

"Fear also is a human instinct, even stronger than greed and ambition. Never before have governors and the governed been so fearful of war. Sure, they'll continue to be overprideful, avaricious, and vengefully jealous. But fear will curb these instincts. Prospect of total annihilation scares everyone."

That statement sums up "bull sessions" from Australia to Singapore, from Thailand to Istanbul through Brussels to Paris, and back home again.

Universally it is recognized that an H-bomb holocaust might wipe out the human race, and make the world safe for insects. Hence, it is figured the LAST World War could be triggered only by accident or by an insane Megalomaniac, drunk with power.

And there's plenty of evidence that, even in the U.S.S.R., power-mad dictators are becoming a thing of the past. Safeguards are being set up by associates to curb them.

Khrushchev, unlike Stalin, bows to internal pressure. Nasser will get his some day, too, whenever other Arabs believe he has become insolently powerful and inherently dangerous.

How Can We Prevent It?

Whereas politicians and dictators historically foster war, common people everywhere yearn for peace. How can mere people like us win and keep PEACE?

How can we circumvent incipient political megalomanics like Hitler and Stalin? (Taking the Pomp out of Politics may require several generations).

In light of recent events, three avenues to international respect, admiration, communication, understanding, and even mutual love in this parlous age have ribboned pleasurably.

1. Sports.
2. Arts.
3. Trade.

Sports, arts, and tradeable goods fan out into universal understanding all around the world.

Everyone everywhere enjoys sports and the variegated forms of art (especially music). Common people appreciate artistic triumphs of the world's top performers—no matter what nationality these stars may be.

Take these recent examples:

Whilst pianist Van Cliburn of Texas was winning musical kudoes and mass adulation in Russia, the Moiseyev dancers from the U.S.S.R. were captivating American audiences to the point of adoration!

And while Russian wrestlers were pinning Americans to the mat in Oklahoma, our basketballers were knocking the spots off Russians over there. In both places the visiting winners were cheered excitedly and heart-feltly.

Olga Fikotova (Communist) and Harold Connolly (American) fell in love at the Olympic Games in Melbourne. All the world applauded their romance, and Iron Curtains melted to unredtape their happy marriage.

Front pages of newspapers everywhere magnify international tensions and vilify Russian, American, British, etc., politicians.

Not the sports pages, though. A good athlete from any country is a hero in every nation, and especially to sports reporters.

Sportsmanship knows no boundaries or ideologies. Athletics comprise a universal language of appreciation.

Over and over again on this fast global survey we heard that jazz trumpeter Louis Armstrong and the Harlem Globetrotters are America's finest ambassadors of goodwill.

And not a few salesmen for American exporters are well beloved in faraway ports, too.

Let's Trade More

Common Denominators

In the worlds of sports, commerce, and culture there are no foreigners—only friendly competitors who abide by universal codes of good sportsmanship

and grand fellowship peaceably.

O.K., then: let's promote more exchanges of students, musicians, dancers, athletes, and salesmen!

Peace equates with people. Common people are good, decent, and friendly everywhere. The more all of us get together and get acquainted and learn to appreciate one another, the more likely it is that we can induce prideful, stubborn, ambitiously bristling politicians to strive for Peace.

We are their real bosses, you know. Without our active (or passive) support and loyalty they are nothing. It's a good bet, for example, that Khrushchev wouldn't know how to guide an H-bomb missile all by himself.

The more we encourage world trade and world travel, the more possible peace becomes. Q.E.D. and 30.

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Write for Bulletin 118-58

Engineers and Manufacturers
of Refrigeration and
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'Poor Design, Described as 'One of Greatest Concerns' of Venezuelan Air Conditioning Contractor

CARACAS, Venezuela—Problems of an air conditioning contractor in booming Venezuela were depicted vividly by William Schlapfer, chief engineer for Emca Tecnica C.A. here.

Some of them, he declares, arise out of Venezuela's great need for consulting engineers on large commercial and industrial projects. "Poor design is one of our greatest concerns," moans Schlapfer.

There are only three individuals in all Venezuela working as air conditioning consulting engineers, he asserted. Only one has had training in the United States and is doing a fine job on his system designs.

"However, he competes with all the contractors as he also

owns a sheet metal shop. Therefore his designs tend to use as much ductwork as possible.

"Other engineers here are European trained and have a lack of knowledge when it comes to using the newest products or ideas in their system designs.

"These people also have no respect for sales engineers and will only listen when a competent engineer talks to them. They do not make full use of catalogs of various manufacturers, but prefer to rely on their previous experience.

"As an example of some of our important problems along this line, we are now finishing the installation of the largest single air conditioning system

in Venezuela.

"It is a Military Hospital here in Caracas with two 520-ton Worthington centrifugal refrigeration units, circulating 2,080 g.p.m. of chilled water to 12 different air conditioning units, located throughout the 17-story building.

"Some of the equipment specified, which we felt was not according to modern practice, but which we were obliged to quote and to supply, follows:

"(A) A separate cooling tower for each centrifugal system with two pumps for each condenser, which makes a total of two cooling towers and four condenser water pumps.

"As this is a hospital, both systems will probably be oper-

ating 24 hours a day and this extra equipment was only extra expense to the client.

"(B) Two air compressors for each air handling system was specified to supply the pneumatic controls. A total of 26 air compressors have been installed. Using a manufacturer's rating for his pneumatic controls a sum total of four air compressors would have done the job. Again extra expense for the client, but we had no recourse to point this out to the client.

"(C) We have been forced to install individual room dampers, controlled by pneumatic damper motors through individual room thermostats. We have static pressure regulators to control pressures within the supply ducts but the main problem will be that nothing has been done about the exhaust system.

"One hundred per cent outside air is conditioned and

directed to individual rooms including operating rooms. As the supply dampers close, the exhaust system will continue to function and cause negative pressures within the rooms. Dust and dirt will then enter these operating rooms causing problems that have been entirely overlooked.

"Also we had to design an iris type of damper with pneumatic motor to fit into the throat of many ceiling diffusers that had two or three inches between duct and false ceiling.

"(D) Galvanized wrought iron pipe was specified for the complete installation and all screwed flange joints with no mention made in the specs that this piping could not be suspended from the ceilings.

"Only after ordering our material did we learn that all pipe supports had to be made by us.

"Extra items were demanded by this consultant after the contract was signed and these included flow meters, extra globe valves and small individual strainers for the water coils. After considerable discussion we were paid for these extras.

"(E) The consultant insists that this installation should be "automatic," as he specified, but with no explanation as to how automatic. With 50 or more pushbuttons for all types of fan units and five buttons for the main machine room, we have made the installation as automatic as possible.

"However, the most pressing problem for us is that the consultant wants no operator for this system!! He has told his client that it is completely automatic and any maintenance man can start and stop the whole system.

"We have had to write several letters explaining the complete operation and the many reasons why an operator should be in charge of these machines.

"Contractors in the States, I am sure, have never gone through this type of problem.

"(F) Although there are 12 separate air handling units, no serious thought was given to zone control. One built-up system of 420 tons with 100% outside air has two fans of 32,310 c.f.m. each, six chilled water coils, six steam reheat coils, two humidifiers, and two 3-way valves, controlling a bank of three water coils each.

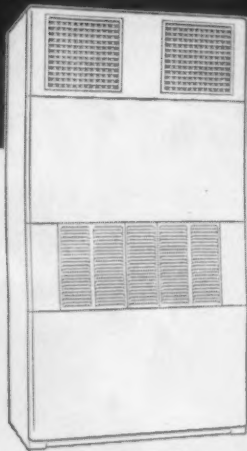
"This system has one huge duct running from the 13th floor down to the first floor with take-offs on each floor. Each take-off runs the length of the bay with again individual room dampers to control the room ambients, with operating rooms included in this one system and no control over the exhausts. We are frankly frightened with the problem of balancing such a system."

Schlapfer said that he had been with Worthington Corp. five years as a sales application engineer before joining Emca Tecnica.

"I am the only American employed at present," he said, "and consider it a great challenge. I wear so many caps and must get results in all of them, i.e.—sales, installation, service, maintenance, forecasting, inventory control, stock clerk, electrician, refrigeration mechanic, application engineer, and several others."

DETROIT NO. 714

AIR CONDITIONING EXPANSION VALVES



★ Broad Range of Application

2 to 10 tons—12—3 to 17 tons—22

★ Sweat Connection Sizes

Inlet 1/2" to 3/4" O.D.—Outlet 5/8" to 1 1/8" O.D.

★ "G" Charge Level Action Feeler Bulb

Minimizes surge for very close superheat control and maximum valve operating efficiency.

★ Easy To Service

Custom charged power elements can be interchanged for different refrigerants and various capacities.

Entire valve easily disassembled for inspection and cleaning, without removing from the line.



Also available with other Detroit custom charges: "C" for commercial, "Z" for low temperature.

The 790-L Distributor (2 to 8 passes) is used with the 714 Valve or any O.D. outlet connection expansion valve of comparable capacity. All outlet circuits are 1/4" O.D.

Detroit No. 716. Here's the newest addition to Detroit's outstanding line of expansion valves. In addition to the many advantages incorporated in the No. 714, Detroit's new No. 716 offers flange connections, giving it wide versatility of installation and making it easier to service.

For complete information see your DETROIT Wholesaler.

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AMERICAN-Standard

DETROIT CONTROLS DIVISION

20-Ton Chiller Air Conditions Powerful Towboat

ST. LOUIS—A 20-ton Curtis packaged liquid chiller air conditioning system will add further efficiency to the "world's most powerful river towboat," now under construction by St. Louis Shipbuilding & Steel Co. for the Federal Barge Lines, it was reported.

Curtis Mfg. Co.'s equipment will cool the crew's quarters, galley, mess room, officers' and owners' quarters. The system was supplied through Crane Co., St. Louis.

"The unprecedented towboat will measure 180 ft. by 58 ft., and will have 50% greater horsepower than the largest towboat now on the rivers," the announcement said.

"The huge towboat will be powered by four diesel engines, capable of producing 8,500 hp. It will be capable of pushing 40 barges, which is a tow one-third of a mile long and equivalent to approximately six acres. This tow, with a cargo of 40,000 tons, is 300 ft. longer than the *Queen Elizabeth* ocean liner," according to the announcement.

The Curtis liquid chiller is a complete refrigeration system, the report noted, adding: "It is compact, easy to install, and enables individual temperature control of separate rooms or areas."

Awnings Can Cut Heat Through Glass 77%, ASHAE Survey Shows

MINNEAPOLIS — Awnings can reduce the summer heat gain through glass as much as 77%, it has been found in tests conducted by the research laboratory of the American Society of Heating & Air-Conditioning Engineers.

Results of these tests were described before the society's 1958 semiannual meeting here in a paper prepared by two members of the laboratory staff: Necati Ozisik and L. F. Schutrum.

Tests were conducted with conventional white canvas awnings, green canvas awnings, and dark green plastic awnings.

On a south window of regular plate glass, the awnings reduced heat gain as follows: white canvas 64%; green canvas, 55%; green plastic, 43%. On a west window the results were: white canvas, 77%; green canvas, 72%; green plastic, 59%.

Among other conclusions reached in these tests were:

"For wind velocities above 5 to 6 m.p.h., venting of the awning is not important" and

"The use of heat absorbing glass instead of regular plate glass in combination with awnings causes only a few B.t.u./hr./sq. ft. reduction in the total heat gain, provided the sunlit portion of the glass is not large."

Tabular data and suggestions for its use in determining heat gain through windows protected by awnings were also included in the paper.

Save \$6,000 on Installation

36 Packaged Heat Pumps Cool Virginia Grade School

BLOOMFIELD, N. J.—What is billed as "the world's first packaged heat pump air conditioned school" will be ready this fall for its elementary classes in Hampton, Va.

In making the announcement, General Electric Co.'s air conditioning department said that equipped with this development in heating, "which saves \$6,000 in installation over conventional methods," the new, modern-styled school plant "will have a bonus feature of air conditioning at no additional cost."

Thirty-six 3-ton General Electric "Weathertron" heat pumps are being put into place (through the wall) and will give continuous automatic comfort throughout the year "without even the flick of a switch,"

it was pointed out. Perry Electric of Hampton is the installing contractor.

According to W. Boyce Blanchard of Williams, Coile & Blanchard & Associates, architect and engineer for the 24-classroom John B. Cary school, the added feature of air conditioning without additional cost will allow facilities of the school to be used for educational purposes during the usual off-school months. He explained that the tight situation arising from the lack of sufficient school facilities in the area will be, in part, alleviated.

Among other new features characterizing the latest design of the elementary school are architectural concepts that have helped the Board of Edu-

cation of Hampton save \$35,000, of structural steel lintels placed over exterior windows.

The classroom dimension being deepened allows a 6-in. thick, cellular steel, roof-deck to span in a direction parallel with the corridors using interior partitions as bearing walls. Constructing the roof-deck in this manner and, at the same time lowering the ceiling height to 10 ft., by using sky lights, saves more than 87,784 cu. ft. of space, it was stated.

In utilizing this relatively new architectural concept, the exterior wall area is also considerably reduced and thus costs less to build, maintain, and to heat. Furthermore, two windows in each classroom are eliminated by using heat pumps at the exterior walls.

Further advantages are said to be realized with elimination

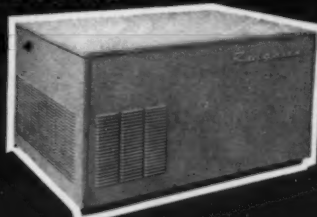
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Imagine! No dull season... sales growing all year long. It's a dealer's dream come true. And on top of that, Rangaire gives you styles and capacities to fit every installation... prices to fit every budget. You'll have open season for sales every day with Rangaire's All-Weather Air Conditioning Systems. Let us tell you how you can become a Rangaire franchise dealer. Write today!

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SUGGESTS EXPORT DATA CLEARING HOUSE

Peerless of America, Inc.
Chicago, Ill.

Editor:

I enjoyed your fine editorial for the July 7 issue! There are many small companies in this country in our industry, and it is rather difficult for them to finance trips abroad for sales representatives, in the hope that business will result. I am wondering if an organization on your part of a cooperative world-wide sales and information group covering this market would not be the first approach to the problem.

The setup of an office in Detroit would be the first step, and collection of catalogs from the various manufacturers would be the second step, and the directing of all foreign inquiries to such office would be the third step.

If this business develops over a period of time, it would give

you an opportunity in your advertising columns to spread the gospel around the world and install confidence in the foreign purchaser who is not accustomed to "mail order" ordering.

Please do not forget that the larger American manufacturers have a permanent export manager who is covering the marts of the world in the interest of the larger concerns. Best of luck to you in setting up this new adventure, if you decide to do so.

R. W. KRITZER,
President

P.S. Your "Around the World" articles are extremely interesting.

SEEKS 'TRUE' 50-CYCLE AIR-COOLED UNITS

Abadan, Iran

Editor:

I have come up against certain problems in my capacity as consulting engineer and/or contractor trying to sell mechanical air cooling to the oil company, business firms and private individuals in South Iran.

I shall be very grateful if you would assist me to solve these problems (or would advise me as to who to write), which I wish to outline to you in the following paragraphs.

Before stating the problems I wish to indicate the weather conditions and the electrical characteristics prevailing:

Max. average summer temperature—120° F.

Electrical Characteristics — 220 volts, 50 cycles, single ph.

In view of the fact that American air cooling units are made for 60-cycle current and are tested for capacity at 95°

F. ambient (ASRE conditions), it becomes clear that when they are used in 120° F. ambient and

Editor's Note: A survey of American manufacturers on page 52 tells what they have to offer to help this reader from Iran and many others with the same problem.

on 50-cycle current, they lose cooling capacity considerably.

To remedy this situation a cooling unit with an oversize condenser, etc., and a "Genuine" 50-cycle condensing unit is required. (It has been noted that manufacturers simply mark the name plates of their machines 50/60 cycle or 50 cycle, whereas they are 60 cycle really. Some are given away by the speed of the motor, marked 1,750 r.p.m.)

Therefore I wish to know:

1. The names of manufacturers who make "Genuine" 50-

cycle hermetic condensing units in the U.S.A.

2. The names of manufacturers of air conditioning units, who install such genuine 50-cycle hermetic units in their units.

3. The names of manufacturers who make units for areas where extra high ambient temperatures prevail.

J. A. FARSHCHI

P.S. Please note that the Air Conditioning units I am discussing are air-cooled units.

GIBSON PROUD OF FOREIGN CUSTOMERS

Gibson Refrigerator Co.
Greenville, Mich.

Editor:

We have been enjoying your experiences abroad. We certainly are proud of our foreign customers, and think they are doing a good job.

C. J. GIBSON, JR.,
President

A-1 REFRIGERATION MAN READY FOR HAWAII

Bay Refrigeration
Coos Bay, Ore.

Editor:

In reading your interesting "Around the World" series we have been intrigued to go to the Hawaiian Islands.

My husband, Sam Morris, has 24 years' experience in the field of refrigeration servicing and selling. We now own a small business in Coos Bay, but we are not ready to settle down yet. Could you give us the name of any refrigeration company who might need an A-1 refrigeration man? (In Hawaii, of course).

We read your "Inside Dope" column every week along with all the other newsy items, and think this paper is tops.

MRS. S. R. MORRIS

SECRETARY LONGS TO RETURN TO HAWAII

Kelvinator of Canada, Limited
London, Ont.

Editor:

I wish to tell you how much I have looked forward to and enjoyed your weekly articles on your recent "Trip Around the World." While I know it isn't the first time you have circled the globe, am sure you found it changed and interesting new conditions in each place; along with having the pleasant experience of meeting old friends and making new ones.

Am sorry that the late Mr. Charles W. Haddon (for whom I was secretary while he was president here) couldn't have enjoyed these articles too. He was such a great admirer of your writings and opinions.

I had a trip to Europe in April of this year—my "Trip 'Round the World" having to be in bits and pieces. Three years ago I visited Hawaii, and its beauty and friendly, serene people have left me with a great desire to return.

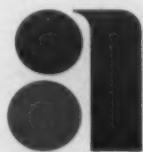
BERTHA HENSHAW

NEWS ITEM: A COMPLETE NEW LINE OF ANSUL PACKAGED REFRIGERANTS IS NOW AVAILABLE. YOUR ANSUL WHOLESALER HAS "FREON-12", "FREON-114", AND SULFUR DIOXIDE IN ONE POUND DISPOSABLE CANS AND "FREON-22" AND METHYL CHLORIDE IN TWO POUND CONTAINERS.



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There's a difference in refrigerants, but it's a difference that doesn't really have much to do with specifications or chemical gobbledegook. The real difference is service—the people who go with the refrigerants. When you buy any Ansul refrigeration product you are getting more than a guaranteed top quality product. You are also getting the help of people who care about your personal refrigeration problems . . . people who are willing and able to help solve them in a creative, imaginative way. We invite you to use our people.



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CONTRACTOR FINDS

You Don't Have To Lose Money On Service

Simple Records Key Shift from Deficit to Profit Operation

By George M. Hanning

LANSING, Mich.—How he switched his four-man service department from the deficit to the credit side of the ledger was outlined here recently by Ernest C. Fox, president of Hager-Fox Heating and Refrigeration Co.

Given a well-trained crew that performs quality work, Fox found that by taking several steps to tighten control, speed service, and establish a sound plan of operation, it was not necessary to lose money on heating and air conditioning service.

Most important step to profitable operation, Fox declares, was to install a "Kardex" record system. It not only reduced record keeping to a minimum, but put a complete dossier on every job at the dispatcher's fingertips.

"When a customer calls in for service," Fox said, "the dispatcher in 30 seconds can have in front of him the complete history of the job. This includes the original contract, service history, when the last service call was made, who made it, what the trouble was, what was done, and what was charged."

"With this information, the dispatcher is in the driver's seat. He can answer the cus-

SEVEN STEPS TO A PROFITABLE SERVICE DEPARTMENT

1. Set up simple but complete record system.
2. Relieve service manager of detail.
3. Put service on cash basis.
4. Keep trucks fully stocked.
5. Keep men working steadily.
6. Know service costs. Set prices to cover them.
7. Increase servicemen's productivity.

tomers' questions immediately with facts, thereby cooling off angry tempers quickly," Fox declared.

The Kardex form saves record keeping because it is filled out initially by the office girl as part of the original order. As she types up the sales contract, it is carboned onto the reverse of the Kardex form.

She keeps the form until the installation is finished. She records on it a complete construction record. Then she sends it to the service department where the equipment's service history is recorded as calls occur.

Second important step to profit was to relieve the service manager of all detail. This leaves him free to apply his energies and superior knowledge in productive work.

"It doesn't make sense to tie up your best man in the office

dispatching servicemen and doing paper work," Fox contends.

"Turn this over to a detail man and put the service manager out in the field trouble shooting and supervising. Then his time will be productive and the company will be getting the greatest return for its dollar."

Third step was to put the service department on a cash basis. Previously Hager-Fox had billed its customers once a month for service. But Fox changed that.

He gave the serviceman a 5% commission for collecting cash on completion of a call. At the same time, he offered the customer a 5% discount for paying cash.

"Instead of offending customers who weren't used to paying cash," Fox said, "this system appealed to their instinct for saving money. At the same time, those who preferred to pay at the end of the month could still do so. Most elected to pay cash."

This system brought many benefits. It pleased customers. It rewarded servicemen. It cut bookkeeping expense. And, it cut out many nuisance calls.

"After a customer has paid for a service call, he is not likely call you back for some minor adjustment," Fox reasoned. "But if he still has your money, he doesn't hesitate to get you back if everything isn't just so."

(Concluded on Page 35, Col. 1)

the *Genie* in this bottle can save you endless trouble!



THAWZONE
THE POWER FLUID DEHYDRANT
PATENTED

It eliminates freeze-ups • destroys trouble-causing moisture • helps prevent corrosion and copper plating • scavenges out oxygen • helps keep expansion valves free of sludge and rust • You avoid call backs caused by freeze-ups after servicing.

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TRACE
—the simple, fast way to pinpoint refrigerant leaks... a positive leak tag.

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—the joint sealer engineered for refrigeration use.

Take Thawzone on every job, use it in every installation charged with the modern fluorine refrigerants (Freon®, Genetron®, etc.) or with methyl chloride, methylene chloride or isobutane. It's economical: ½ oz. treats a pound of refrigerant. And it's easy to use.

See your refrigeration wholesaler today for Thawzone and the free Thawzone Service Manual.

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Highest quality products of the foremost American manufacturers—FROM ONE SOURCE!

Air Conditioning and Refrigeration is more than just machines . . . it is engineering and consultation and service. It's why it pays to buy from ROCKE INTERNATIONAL whenever you are looking for NEW and BETTER equipment, dependable performance and efficient service. Sell the Rocke International equipment that gives you the most—to further safeguard both your PROFIT and prestige—to keep more business coming to you!



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WABASH
Dryers, filters

SUMMER SERVICE - ORDER

Name _____, Phone _____

Address _____

I would like to have service approximately _____

Grade of Oil _____ Company Oil _____

Equipment to be cleaned & serviced: Please check

☐ Furnace
☐ Air Cleaner
☐ Air Conditioner

If you rent, please give Owner's address: _____, Phone _____

Address _____

Hager-Fox Heating and Refrig. Co.
1115 S. Pennsylvania Ave.,
LANSING, MICHIGAN
IVenue 2-1663

Dear Customer:

This is a friendly reminder that another heating season has passed and another will be upon us before we realize it. Your heating unit like any other piece of mechanical equipment must be serviced to serve you faithfully.

The most favorable time to have your heating equipment serviced is between this date and September 1st., for there is always a limited service man power available when the heating rush begins in September. After September 1st., it is very difficult to meet appointments with all the EMERGENCY service calls and START-UPS. We have at your disposal expertly trained heating men who can service your unit before the winter months are with us again.

The Summer Service rate is \$5.50 for the first half hour which includes travel time and truck use, and \$2.75 for each half hour thereafter, plus the cost of any parts required to put your unit into satisfactory operating condition.

Beyond the 10 mile city radius mileage and travel time shall be charged in addition to above rates.

The Summer Service will include:

1. Oil fan bearings.
2. Oil motor bearings.
3. Check motor operation.
4. Check fan belt and adjust tension of same.
5. Completely clean burners and blower.
6. Check all controls.
7. Check nozzle and replace if necessary on gun type burners.
8. Check filters and change if necessary.
9. Adjust draft.
10. Check pilot safety.
11. Check humidifiers and replace necessary parts.

It is important that filters be cleaned and changed periodically as PLUGGED FILTERS will cause inefficient heating and high fuel bills.

We shall appreciate having you detach the above self-addressed post card as soon as possible, so we may be able to schedule your call nearest your requested date.

Very truly yours,

Anne R. Laurila
Anne R. Laurila
Service Manager

ARL:ew

RETURN POSTAL is part of sales letter that solicits heating service check-up from customers. Knowing when service is wanted helps dispatcher schedule work to keep idle time to minimum.

Does Your Appliance Carry This

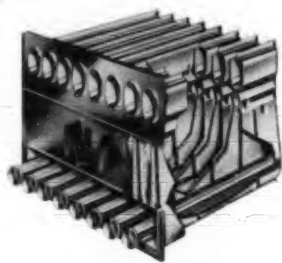
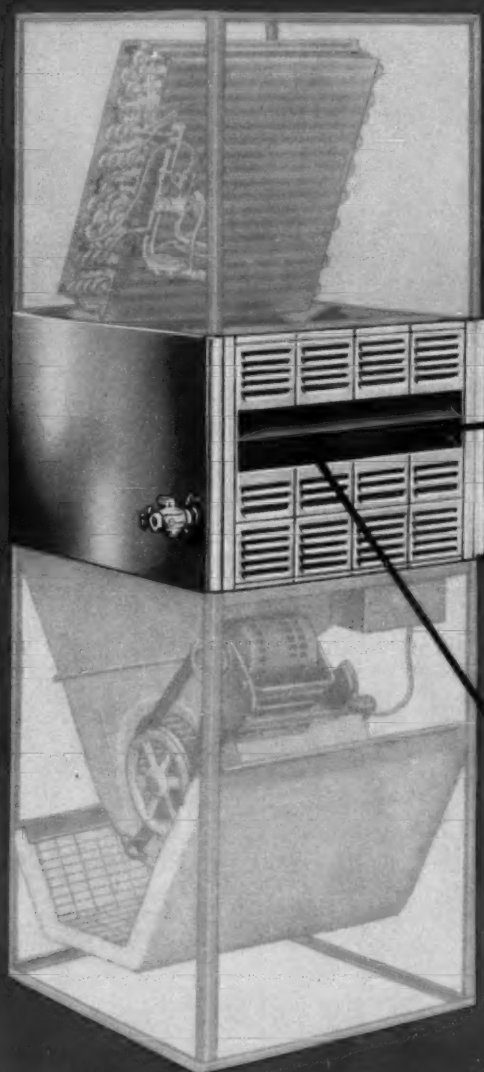
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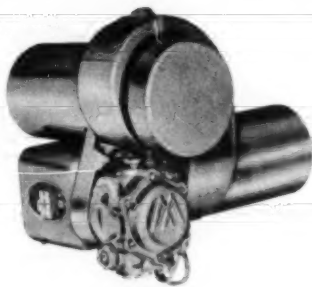
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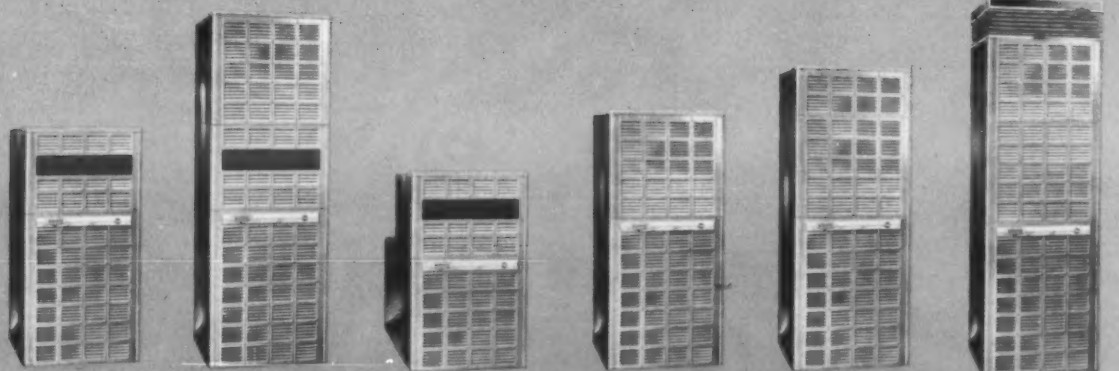
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UP-FLO ALL SEASON

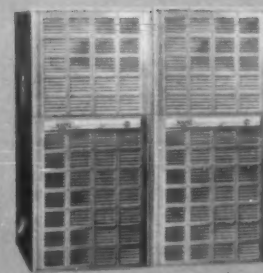
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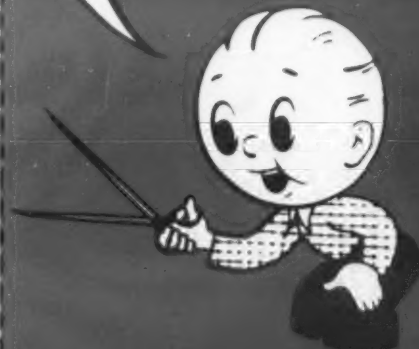
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- Eliminates mismatching of blower with cooling and/or heating capacity
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(Concluded from Page 30, Col. 3)

PROGRAMMED WORK CUTS IDLE TIME

In his promotion letters, Fox not only asks the customer to indicate on a return postal if he wants the service, but to specify approximately when he wants it. With this information, the dispatcher can schedule service work to match requests

"Since then we have had to increase rates several times to

FASTER WORK, MORE PAY

Having them phone in, gives the dispatcher an accurate record of how long the man

[illegible]

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GERMANY — AMCO Apparate & Maschinenbau GmbH, Postfach 2130, Wuppertal, Wichlinghausen. AUSTRALIA — Frigrite, Ltd., Graham St., West, Port Melbourne, Victoria.

Commercial Refrigeration Has Far To Go In Italy, Manufacturers Need Design Aid

MILAN, Italy—There is much to be done in commercial refrigeration and air conditioning in Italy, notes Luciano Dell'Orto, refrigeration and air conditioning engineer here.

"We are, however, advanced compared to other European countries in the field of medium and big food preservation warehouses, particularly for fruits," he said.

"We still have much to learn in quick freezing of foodstuff, mainly fish, as supermarkets have appeared in Italy and they are going to develop still more."

There is also much to do in transport refrigeration, particularly motor vehicles. They face

considerable development when the big national motor road is finished.

Ing. Giuseppe Dell'Orto produces refrigerating machines and plants for ammonia and "Freon" suitable for all industrial application. Its only American imports are thermostats and pressure controls from Minneapolis-Honeywell Regulator Co., back pressure valves from Alco Valve Co., and float valves from H. A. Phillips & Co.

The float valves are the only product the company imports directly. The others are purchased from Italian representatives of the American manufacturers.

Notwithstanding his lack of direct connections, Dell'Orto has two suggestions for American manufacturers.

One is that, in face of currency difficulties, "some American producers should be more inclined to grant licenses."

The other is that more co-operation on the design level between American and Italian manufacturers would further the development of Italy's refrigeration industry. Italian manufacturers, while they have designers, cannot afford to spend large sums on technical designs, he indicated.

Dell'Orto declared that Italy was third among European countries (following Germany and France) in the production of domestic refrigerators, which are reasonably priced.

In commercial refrigeration, there is still much to do in reference to food stores, display cases, fisheries, and supermarkets.

Air conditioning progress will be steady, though slow, with increasing sales of smaller size self-contained units.

Rhodesian Firm Seeks U.S. License

SALISBURY, Southern Rhodesia—Ellisons Electrical Engineers (Pvt.), Ltd., commercial refrigerator manufacturing concern here, is seeking approximately \$30,000 for plant expansion and development of a new line of U. S. products.

The firm is particularly interested in making a licensing arrangement with a U. S. company for the production and sale in the Federation of various types of self-service counters and freezers. Investment capital for the expansion of its building and plant also is desired from the American licensor.

The firm's address is P.O. Box 1839, Salisbury, Southern Rhodesia.

May Sell Italian Refrigeration In U.S.

MILAN, Italy—An Italian manufacturer of refrigeration equipment is currently considering launching its products on the American market.

A. Contardo, head of a firm by the same name, manufactures unit coolers, condensers, evaporators, air conditioning coils, and refrigerating coils.

Contardo says his firm was established in 1928 and was the first to make condensers and evaporators in Italy. His is one of the oldest firms in refrigeration in Italy, he says.

Currently exporting to all parts of Europe and to parts of Africa and Asia, Contardo is currently negotiating with an American firm to export his products to the United States.

Only American material used in his equipment is fans. He purchases them from another Italian firm which imports them from the United States.

In country after country—more users are investing in Tyler for better food refrigeration—outstanding value!

TYLER

REFRIGERATION INTERNATIONAL, C.A.

World leader in commercial food refrigeration



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than 44 countries
the world over
through Tyler factories
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Tyler users in supermarkets, food stores, restaurants, hotels, institutions all over the world, benefit with more efficient, low-cost, dependable refrigeration! Tyler offers the most complete line for every food refrigeration need.

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is just one reason for Tyler's world leadership in commercial refrigeration. Tyler maintains an experienced staff of field representatives who cover all parts of the world... who know and understand the complex food refrigeration requirements of many lands. They maintain direct factory contact, offering field assistance to Tyler Distributors and users. Free store planning service... plus many other important benefits help make Tyler a profitable line. Send coupon for details.

NEW TYLER PLANT IN GERMANY

now under construction—full production by January 1959. Located in Schwelm, 25 miles from Dusseldorf, in the Ruhr industrial area, it will manufacture the complete line of Tyler-designed commercial food refrigeration equipment. Patterned after the Tyler Niles (U.S.A.) operation, the new factory will feature modern, assembly-line production methods. Tyler-designed commercial refrigerators are also manufactured in Australia under an agreement with Frigrite, Ltd.

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☐ Send full information on the complete line of Tyler commercial refrigerators and storage freezers.
☐ I am interested in becoming a franchised Tyler Distributor. Please send details.
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Modernization Expands Market For Refrigeration, Cooling In Cuba

Ghana Builds Pilot Cold Storage Plant

Selective Shopping In Sessex Super

CIEGO DE AVILA, Cuba—With stores and offices in constant modernization, the Cuban air conditioning and commercial refrigeration market is growing every day, declares Rogelio Vocero, manufacturer of commercial refrigeration equipment.

The outlook for the future is very attractive, he added, as Cuban business attains the level of the most important cities of the world.

Vocero said his factory was founded in 1924, when commercial refrigeration was scarcely known in Cuba. Now, his firm's net worth exceeds \$1 million and his equipment covers the cities and countryside of the island.

Vocero manufactures commercial refrigerators, showcases, storage rooms, and ice cream makers. He represents Curtis Mfg. Co. from which he buys condensing units and air conditioning units. Refrigerants are purchased from Virginia Smelting Co.

"All the raw material that we use in our factory is supplied to us by the United States," said Vocero, "with the exception of cork, which we buy from

Spain or Portugal."

In addition to electrically powered equipment, Vocero also sells units to be operated by gasoline or petroleum engines. They are equipped with special plates filled with an eutectic solution.

"This gives us best results and consumption of fuel is very small," he commented.

The firm's main plant is in Ciego de Avila. Branches are located in Havana, Holguin, and Santiago de Cuba. Agents and servicemen are appointed in most other important centers.

From the company's beginning to the present, it has enjoyed the cooperation and best attention from its American sources, Vocero stated.

ACCRA, Ghana—A cold storage plant which will offer facilities for bulk storage of meat, fish, and other items on a rental basis is under construction here.

The plant will have a maximum initial capacity of 1,500 tons and space for expansion to 3,000 tons. It is being built by a new company, composed of Ghana Industrial Development Corp., a government entity, and a consortium of three Danish firms and a Norwegian concern.

The company also will operate a fleet of refrigerated trucks, to be procured by local tender.

The Scandinavian group was conducting a preliminary survey aimed at possible construction of similar plants at Tema, Kumasi, Takoradi, and Tamale.



TWO TIER FRIGIDAIRE Manhattan refrigerated self-service display case, 24 ft. long has been installed in Premier Supermarket at Crawley New Town in Sussex, England. Altogether, the store has 164 ft. of refrigerated display along with cold rooms for meat, fish, and vegetable storage.

Yugoslavia Gets First Supermarket

BELGRADE, Yugoslavia — First self-service supermarket in Yugoslavia was opened in Belgrade last April. Equipped with fixtures from the "Supermarket, U.S.A." exhibit at the Zagreb Fair last autumn, the market is expected to be the first of a chain of 60 units.

Samo Posluga, as the Belgrade store is called (it means "self service"), has 10,000 sq. ft. of space. Later units will be in three smaller sizes, 7,000, 4,000, and 1,100 sq. ft.

It was indicated that the Yugoslavs were interested in importing American fixtures for these stores.

Iraqi Wants To Start Own Ammonia Plant

HILLA, Iraq—Quotations including installation cost for the machinery and equipment needed to establish a plant capable of supplying Iraq's ice-making plants with their ammonia requirements are desired from U. S. firms by Haj Rashid Shnawa, brick plant owner and local automobile distributor.

He also is interested in employing an American engineer to train the necessary staff, for the plant reportedly would be the first of its kind in Iraq. Capacity of such a plant is unknown but Iraq's ammonia imports for 1956 amounted to 244 tons of anhydrous and liquid.

There are 60 ice-making plants in Iraq, half of them in Baghdad.

Only Halstead & Mitchell offers a cooling tower with a 20-YEAR GUARANTEE

ON THE WETTED DECK
AGAINST FAILURE
DUE TO ROTTING
OR FUNGUS ATTACK



Here's why this is important: Fungus growth on cooling tower wood fill very often can accumulate to the extent that it actually obstructs air flow through the tower. This reduces tower capacity and affects performance of the refrigeration or air conditioning equipment involved. In severe cases, the wood will rot and cause tower failure.

Treated Deckings—For positive protection against such harmful effects, Halstead & Mitchell subjects the wood deck material used in all H&M cooling towers to a special, pressure creosote treatment. That's why only Halstead & Mitchell offers a 20-Year Guarantee on the wetted deck against failure due to rotting or attack by fungus. Original tower capacity is maintained, and that reliability is what cooling tower purchasers need.

Anti-Corrosion, Plastic Coatings—Halstead & Mitchell Cooling Towers have many other design features that increase tower life and keep maintenance costs to a minimum. For instance, the cooling tower casings are completely protected against corrosion by separate plastic coatings of Vinsynite, Vinyl Zinc Chromate, and chlorinated rubber, after assembly. Every edge, every corner, is sealed against rust.

Permanently Sealed Bearings—Another example, fan bearings are permanently lubricated and sealed. Damaging moisture is kept out. Maintenance and periodic greasing are eliminated.

H&M Cooling Towers are available in capacities of 2 thru 125 tons. Types include propeller fan, centrifugal fan and take-apart models. See your local wholesaler, or write for more information. Halstead & Mitchell, Bessemer Building, Pittsburgh 22, Pa.



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Only 25¢ each.

Air Distribution Requirements In Year-Round Air Conditioning

Part 2-Fundamentals of Air Handling

By Frank D. Klein, Chief Engineer, Governair Corp.

It must be immediately recognized and understood that in establishing the performance of fan equipment (blowers) where they are operating in a housing or duct or cabinet on the inlet side and discharging into an area which will involve "abrupt expansion" on the discharge side, that the Borda Effect precludes the possibility or sensibility of measuring discharge performance at any point other than that point downstream where *inelastic impact effect* has dispersed and its loss absorbed and compensated for by the ultimate combination of the two velocities into the establishment of another Velocity Pressure Stabilization.

From a practical standpoint therefore in establishing performance values of fans let us say as an example operating in cabinets whose discharge is immediately made into a discharge take-off duct, exterior to the cabinet, measurement must be made at that point where the Borda Effect no longer will influence the measurement.

As a recommendation this should fall at a point downstream equal to a minimum of seven times the diameter of the wheel to a maximum of ten times diameter of the wheel.

On the other hand values of fans operating in cabinets where they abruptly discharge from the area of their own scroll into the cabinet (such as in blow-through type equipment), to ultimately discharge through an outlet in the cabinet, that the performance changes from an expression of *fan performance* to one of *unit outlet performance* which should be judged on the basis of the outlet velocity calculated on the area of the unit outlet.

The foregoing might be accepted at first glance as highly controversial, yet its logic is unassailable.

No fan manufacturer will, as pointed out before, guarantee the performance of his equipment in anyone's enclosure or under any other conditions than that by which it was originally rated. On the other hand, to those interested in establishing values of performances in designed enclosures and ductwork we are concerned only with that value of performance under the conditions of our application.

We must therefore require, accept, and hold to the rated performance of the manufacturer, regardless of whether his rating is based on fan scroll outlet or unit outlet, and apply the rate performance based on its integration effect in the system we design.

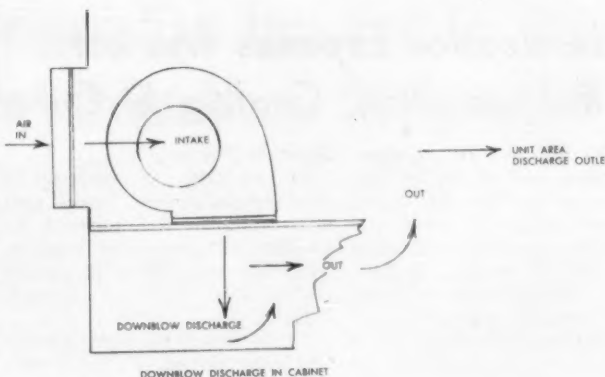
Now to consider this "abrupt expansion" effect as related to expansion from one cross sectional area to another. Refer to Figs. 29 and 30 and specifically at this point to Fig. 29.

Note here the illustration of the possible "abrupt expansion effect" in both the case of the Downblow Discharge and the Drawthrough Discharge. The former affected by abrupt expansion into the cabinet itself and the latter affected by abrupt expansion into the duct area increased by adding a "collar" around the edge of the fan outlet thus causing a larger duct connection to be made.

Refer to Fig. 30. Here the air being discharged follows through a discharge duct comparable in area to that of the fan outlet, proceeds downstream and then discharges through abrupt expansion into another duct, without transition, of a larger cross sectional area. Note here now the potential turbulence.

Fig. 29 should not be misunderstood insofar as the illustration for the Downblow Discharge is concerned. No attempt has been made to show the potential pattern of turbulence. Some investigations have been made by the author in such units to establish an air pattern by smoke bombs, but the initial and returbulence was so erratic it would be foolish here to attempt to describe one.

Refer once again to Figs. 27 and 28. Specifically refer to Fig. 28 and the discussion of the velocity of the air leaving the wheel at that point between the upper lip of the cut-off blade and the top and sides of the scroll in that area, as compared



DOWNBLOW DISCHARGE IN CABINET

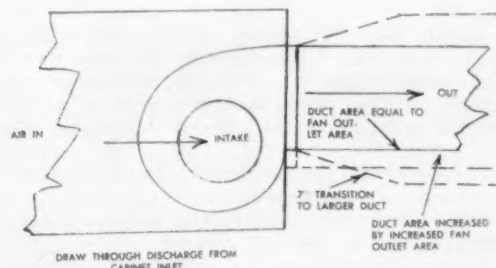


FIGURE 29

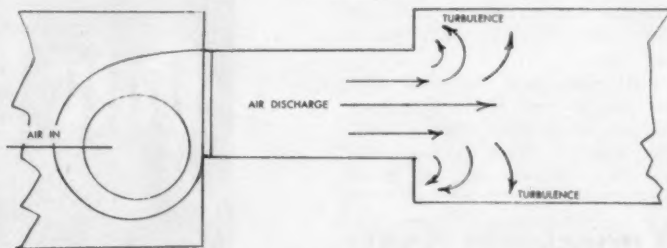


FIGURE 30

air when it spills into the discharge duct, whose area is influenced by the entire "collar" of the scroll to which the discharge duct must be attached. Here specifically is an "abrupt expansion effect," which involves the extreme turbulence and returbulence about which we learned in the previous paragraphs.

Were we to be specific, scientific and exact we would be forced to admit that the so called *outlet velocity* of the air and the fan must be that calculated on the area involved between the upper lip of the cut-off blade, the top of the scroll,

to the *reduced velocity* of that and the sides of the scroll adjacent only to that of the cut-off blade.

Practically however, because of the foregoing explanation we must say that the outlet velocity must be calculated on that area of the scroll outlet, because that is exactly the *ultimate area downstream where inelastic impact has been dispersed*. Thus the reason for measuring and establishing standards for fans in the duct systems by the methods as outlined in the previous text as illustrated in Figs. 18 and 19.

(To Be Continued)

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Market Good, Problems Multiply

Rising Freight Charges Hurt American Refrigeration Imports In So. Africa

DURBAN, South Africa — "The main problem which faces us here in South Africa," writes C. A. Christerson, director of Airco Engineering Ltd. here, "is the high cost of American air conditioning and refrigeration equipment."

"There has been a steady increase in freight charges and this definitely now favors importers from Europe," he continues.

"We have found it possible to effect considerable savings by part manufacturing in this country. We visualize that if present increases in American

prices and freight continue, more local manufacturing will result with a consequent reduction in imports from U.S.A."

"The household refrigerator market is a good example."

"The majority of the well-known brands are manufactured in South Africa today at prices considerably less than the cost of importation. This market is almost saturated today."

Airco, he said, has represented Carrier Corp. in South Africa for more than 20 years. The firm imports anything from window room air conditioners to large mine cooling plants running up to 2,000 tons.

It is also licensed to manufacture Carrier fan and coil units, evaporative condensers, cooling towers, etc.

"We also manufacture all ductwork and other incidental items not only here in Durban, but also at our branches in Johannesburg and Cape Town," he added.

Christerson commented that there is considerable demand for industrial refrigeration. Air conditioning for industry and comfort is increasing rapidly. "The future is extremely bright," he added.

As an indication, he noted that Airco's annual sales rose

from about £4,000 in 1940 to more than £1,000,000 today.

Conceding that Airco was getting excellent service from Carrier, Christerson asserted that "we generally feel that the American cost structure is too high to remain competitive."

"This problem, in our opinion, can only be solved by local manufacture or by de-valuing the American-dollar."

"We find that the quality of mass produced equipment, such as room air conditioners, has suffered during the past few years. We believe this is a direct function from the competitiveness of the American home market. But our service problems on room air conditioners and such like have risen considerably during the past few years."

"In general, we feel that American manufacturers should be more willing to extend credit facilities to recognized distribu-

tors of long standing."

"New capital in South Africa is almost impossible to come by. Most organizations can only increase their capital by increasing their reserves. This lack of capital consequently results in tightening up of inventories which in turn reduces the sales potential."

Christerson also asserted that "with the increasing tendency to publish B.t.u. ratings on unitary equipment in the U. S. A., we feel that the overseas buyer is also entitled to the same protection, more particularly if he comes from a 50 cycle territory."

"In your 1958 list of room air conditioners manufactured, the Carrier Corp. was the only one who publish certified 50 cycle ratings. Are we to assume that Carrier is the only manufacturer in the U.S.A. who today produces a genuine 50 cycle room air conditioner?" he asked.

Industrialization To Broaden Sales Market In Egypt

CAIRO, Egypt — Not only does Egypt's weather favor the development of sales in air conditioning and domestic and commercial refrigeration, but Egypt is on the threshold of a new era for consumer products.

"This is a direct result of our government's policy to industrialize the country," asserts Nicolas Diab. "This policy has created a new class of consumers that did not exist before."

Diab is managing director of the Building and Engineering Supplies Co., S.A.E. Head office is in Cairo, with a branch in Alexandria.

The firm has distributed Westinghouse appliances and commercial refrigeration equipment since 1936, Diab said. It is now negotiating for a licensing agreement to manufacture Westinghouse refrigerators, washing machines, and room coolers.

The firm has already concluded a licensing agreement with a Swiss firm to manufacture absorption type refrigeration. It has been manufacturing display cases, ice cream cabinets, and self-contained commercial cabinets for some time now.

Admitting to no special problems, Diab said his major difficulty is obtaining dollar exchange to import U. S. made equipment.

"Our weather is our best salesman," he said.

Athens Clinic, Hotel In Baghdad Cooled

AUBURN, N. Y.—The White Cross Clinic in Athens, Greece is being air conditioned by A. Livanios, its distributor there, reports Remington Corp., manufacturer of air conditioning here.

This is believed to be the first air conditioning done for a hospital in Greece.

Remington also reports that the Regent Palace hotel, famous landmark on El Rashid St. in Baghdad, has been completely air conditioned by its Iraq distributor, Badi Amin Zaki of Iraq Heating & Refrigeration Co.

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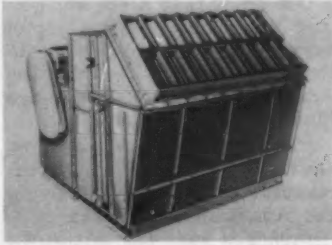
Bows New Multi-Zone Air Distributing Units

A new line of multi-zone air distributing units (Series 1600) for commercial buildings and air blending in multiple-zone applications has been announced by the Sturtevant Div., Westinghouse Electric Corp., Dept. T-222, ACRN, 200 Reedville St., Hyde Park, Boston 36.

In seven basic sizes for total capacities of 4,000 to 34,000 c.f.m., units are made to handle up to 16 separate zones.

The units are of the blow-through type with the outlet divided to serve either cooled or heated air or controlled mixtures of the two to each zone.

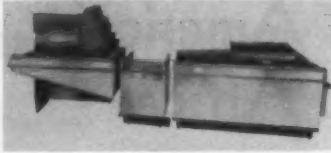
Fan wheels are designed with



60 deep, closely spaced, forwardly curved fan blades to provide uniform air flow and assure quiet operation. Made of corrosion resistant, high-strength alloy steel, they are designed for surge-free operation.

Number of zones served by a single unit varies with the unit size. All sets of dampers are interconnected with a single, continuous external connecting rod which can be cut in the field to suit the required number of zones. Individual zone control is then obtained by the use of separate modulating damper motors.

Hussmann Checkout Line Offers 12 Sizes



The most complete line of checkouts ever offered the food store industry has been introduced by Hussmann Refrigerator Co., Dept. AC&RN, 2401 N. Leffingwell, St. Louis 6.

The line contains six basic checkouts with over-all lengths of 8 ft., 8 ft. 7 in., 8 ft. 9 in., 9 ft. 4 in., 9 ft. 9 in., and 10 ft. 6 in. These sizes are made up with front and bagging sections of

varying lengths.

In addition to the six basic models . . . a 22½-in. scale stand unit is available which fits between the front and bagging sections of any model . . . making a total of 12 different size checkouts in the line.

Single or double belt models are available. The new checkouts are engineered to handle two orders at once.

Features include divider bar on bagging end to separate orders; slideout bagging shelf; dividers for bag compartments; electric eye, foot, plate or hip switch; scale platform behind checker; merchandiser shelving unit; and pull-out refuse container.

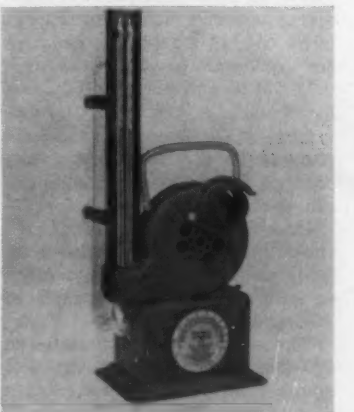


Air Purifier Claims 95% Effectiveness

A new electrostatic device that removes some 95% of all pollen, dust, and smoke particles from homes, offices, and hospitals has been introduced by the Coolerator Div. of McGraw-Edison Co., Dept. AC&RN, Albion, Mich.

The 15-lb. portable air purifier features an electrostatic fan-filter, for which a patent has been applied, and an odor and bacteria-killing ultra-violet lamp.

The unit, which measures 8 by 9 by 16 in., was adapted from the Lectrofilter developed for this year's Coolerator air conditioners. List priced at \$59.95, the air filter, which uses only ordinary house current to power its three-speed fan, plucks tiny smoke, pollen, and other particles from the air by attracting them electrically to a removable, washable dynel filter.

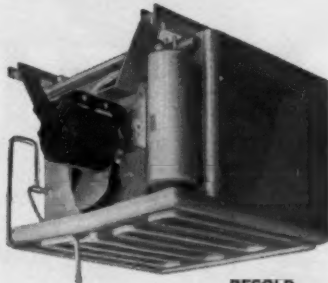


Valve Features Positive Relief, Tight Shut Off

Automatic reseating temperature and pressure relief valve for hot water heaters is announced by H. A. Thrush & Co., Dept. AC&RN, Peru, Ind.

Special high temperature com-

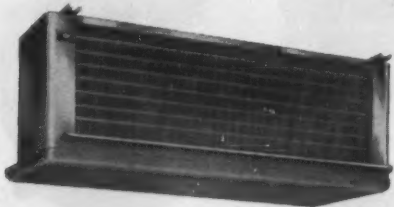
position diaphragm and seat washer assure positive relief and tight shut off, the manufacturer said. Sealed temperature element at end of a 6-in. stem is located in top part where water is hottest.



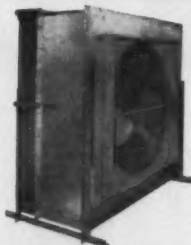
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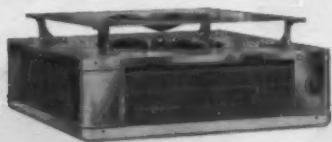
When it comes to commercial or industrial air conditioning and refrigeration there's a highly specialized and highly efficient item of RECOLD equipment that does a specific job specifically well.



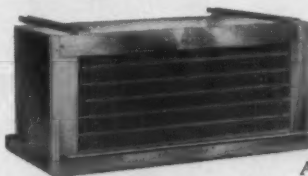
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Battery Powers Hill Motorized Psychrometer

A battery powered motorized psychrometer for relative humidity and dewpoint reading has been introduced by E. Vernon Hill & Co., Dept. AC&RN, P. O. Box 189, Lake Geneva, Wis.

Matched wet and dry bulb thermometers are protected by a shield from radiation. Relative humidity can be read directly on a dial mounted in the base.

The psychrometer features steady aspiration over the wet and dry bulb in excess of 20 f.p.s. A standard 6-volt battery powers the motor. For readings in ducts, filters, and hard-to-reach areas, a 1-in. i.d. tubing can be attached.

Handy Tube Bender Smoothly Bends any pipe or Tubing 3/8"-1 1/4" O.D.

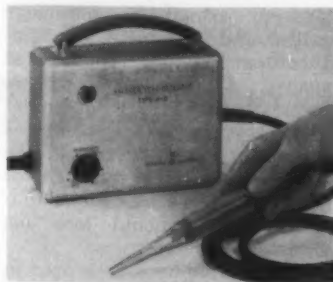


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FOR MORE INFORMATION ON THE PRODUCTS DESCRIBED ON THIS PAGE
Write Directly to the Company—at the Address Given in the News Item



Detector Claims Low Cost, High Efficiency

General Electric Co. has announced a new low-cost, highly-sensitive leak detector developed specifically for the air conditioning and refrigeration serviceman.

Engineers at the company's Instrument Dept., Dept. AC&RN, West Lynn, Mass., point out that the new Type H-6 is more sensitive and gives faster response than the common halide torch. Also, its sensitivity is unaffected by brilliant light or air circulation and there is no flame to cause fires, burn users, or blow out.

Capable of pinpointing leaks within a distance of $\frac{1}{4}$ in., the unit consists of a probe and a control unit. It automatically adjusts itself for an atmosphere containing a refrigerant such as "Freon," Genetron, or Isotron. The instrument responds only when a change in concentration is detected as the probe passes a leak.

An indicating light, housed within the transparent plastic probe, lights up for about one second when a leak is detected. Large leaks cause a double flash. The unit will recover in a little more than one second when removed from the leak.

The complete Type H-6—probe and control box—has a shipping weight of only 10 lbs. Net user price for the new leak detector is \$180.



Slant Fin Offers Hinged Accessories

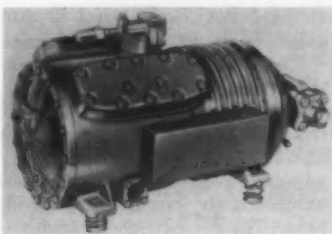
Piano-hinged accessories are the latest field-tested additions to the line of baseboard radiation manufactured by the Slant/Fin Radiator Corp., Dept. AC&RN, 130-15 89th Rd., Richmond Hill 18, N. Y. Described as a radical departure from the old-fashioned screw-on type, the new accessories include wall trims, end caps, valve enclosures, and inside corners. They are also designed to snap-in to place.

These hinged accessories allow the installer to complete his accessory installation immediately without having to wait until plaster or sheet rock is mounted.

Previously, air vents or control valves were accessible only when costly valve enclosures were used, or when the entire front panel was removed. This often resulted in damage to the finished coat of paint.

Now the front portion of the accessory can be lifted, and the contractor has easy access to the valves or vents.

End cap and wall trims are 4 in. wide, valve enclosures, 8 in. wide, and inside corners, 3 $\frac{1}{2}$ in. wide.



Brunner Offers New Motor Compressor Line

A new line of motor compressors up to 15-hp. units, for use with Refrigerant-22, has been introduced by the Brunner Co., subsidiary of Dunham-Bush, Inc., Dept. AC&RN, W. Hartford 10, Conn.

The units are suction gas cooled insuring greater durability and longer life to the vital motor windings. Bolted construction permits take-down for servicing, and speedy removal of valve plates for inspection.

The units are of compact design and light weight.

Revcor Has Correctly Matched Housings, Rings

Correctly matched housings and inlet rings for each of the 22 standard Revcor wheel diameters from 3 $\frac{27}{32}$ in. to 15 in. were announced recently by Revcor, Inc., Dept. AC&RN, 251 Edwards St., Carpentersville, Ill.

All parts of the sheet metal housings are die formed insuring custom made uniformity at mass production prices, the company said.

Housings are designed to permit adaptation of larger size wheels when space limitations require.

Housings are equipped with formed inlet rings and removable cutoffs.

Inlet rings feature bell mouth venturi design for least resistance to air flow. Diameters are correctly matched to Revcor blower wheel inlet diameters, according to the manufacturer.

Lightweight Riveting Tools Introduced

Two new lightweight riveting tools that can be used for setting small rivets up to $\frac{3}{16}$ in. diameter in standard, overhead, or blind applications have recently been announced by the "Pop" Rivet Div. of United Shoe Machinery Corp., Dept. AC&RN, West Medway, Mass.

One, a hand tool just slightly larger than ordinary household pliers, will set aluminum rivets of $\frac{3}{32}$, $\frac{1}{8}$, or $\frac{5}{32}$ in. in diameter, and monel or steel types up to $\frac{1}{8}$ in. in diameter.

The other, an air-hydraulic gun that weighs approximately 2 lbs. will pull monel rivets up to $\frac{3}{16}$ in.

The powered tool, which is designated as a PRG Hydraulic Gun, consists of an air-hydraulic intensifier, a portable riveting gun, and connecting hoses.

The intensifier connects directly to shop air outlets and operates at pressures of 70 to 100 p.s.i.

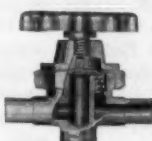
The intensifier, in turn, is con-



nected to the riveting pistol or gun, which weighs only 2 lb. 3 oz.

The rivet can be placed either in the gun or the work, and the cycle completed by a light squeeze on the spring trigger.

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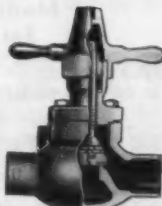
"Golden Bantam" Packless Valve—Type 516

A small packless line shut-off valve with $\frac{1}{4}$ " thru $\frac{1}{2}$ " flare, O.D.S. or extended end solder connections. Also "Blue Bantam" and "Standard" Balanced-Action packless line shut-off valves with $\frac{1}{4}$ " thru $\frac{1}{2}$ " Fl. and $\frac{1}{4}$ " thru $1\frac{1}{2}$ " O.D.S. size connections.



Cross-Vu® Hermetic Seal Liquid Indicator—Type LI-16

Brass indicator with glass fused directly to metal body. Maximum working pressure 500 P.S.I. Connection sizes: $\frac{1}{4}$ " thru $\frac{1}{2}$ " M.Fl., M.Fl. x F.Fl. or with extended ends and solder connections.



Wing Cap Packed Valves—Type 203

The standard of the industry. Bronze alloy with O.D.S. connections in sizes $\frac{1}{4}$ " thru $4\frac{1}{2}$ " (Globe) and $\frac{1}{4}$ " thru $3\frac{1}{2}$ " (Angle). Also semi-steel with $\frac{1}{2}$ " thru $2\frac{1}{2}$ " F.P.T. connections and semi-steel flanged type globe and angle valves with brass O.D.S. or steel butt-weld adapters, and one piece socket weld or F.P.T. flanges in a wide range of sizes from 1" to 5 $\frac{1}{2}$ ".

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Angle Relief Valve—Type 52

UV ASME—NB—National Board Certified

Forged brass automatic pressure relief valve. Pressure setting range 50 to 450 P.S.I. Size connections: (M.P.T. Inlet x Flare Outlet) $\frac{1}{4}$ " x $\frac{3}{8}$ ", $\frac{3}{8}$ " x $\frac{1}{2}$ ", $\frac{1}{2}$ " x $\frac{3}{4}$ " and $\frac{1}{2}$ " x $\frac{1}{2}$ ". Also $\frac{1}{4}$ " O.D.S. x $\frac{1}{2}$ " O.D.S.



"DRI-COR" Filter-Drier—Type V800

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"Y" Strainer—Type 895

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Poor Engineering Threatens Overseas Market

Distributors Should Be Required To Meet Standards To Keep Franchise, Says Albert Rebel, Pres. of Recold International

By Albert Rebel, President, Recold International Corp.

H. T. (Hy) Jarvis, founder and president of Recold Corp., and the writer completed our trip around the world in 67 days, starting this Spring. I suppose that Editor George F. Taubeneck may say that we were loafing, since George made it in 50 days.

Just the same, although we did take in some sightseeing, we used our time to advantage, and to me, on my twenty-third circle tour, it was a great satisfaction to me to show "Hy" that Recold products are well established in the refrigeration and air conditioning business in the 20 countries we visited.

Upon receiving a request from AIR CONDITIONING & REFRIGERATION NEWS to write a report on how the market for refrigeration and air conditioning products is progressing in the places we visited, I felt that I should limit myself to some gen-

eral thoughts and observations. First, as to the general state of the export business in air conditioning and refrigeration equipment: the fact that I am able to report that our export business has more than doubled in the past 12 months should be an excellent indication that there has been no recession.

Distributor Must Give Good Service

In my opinion, the most important factor the American manufacturer of air conditioning and refrigeration equipment should consider is, that he must appoint a distributor who is in a position, not only to sell, but to give good service.

I cannot quite agree with Editor Taubeneck's remarks about Monsieur Forani in Belgium, who seems to be complaining that it takes from 10 days

to several weeks to get a reply from U. S. A. headquarters when Monsieur Forani encounters a service difficulty.

Monsieur Forani should be able to solve his difficulties himself and I firmly believe that anyone who handles an important American product should be in a position to sell, to install, to maintain a good supply of replacement parts, and most important of all, to be able to give complete and efficient service. My advice to distributors abroad with such problems would be to hire an experienced refrigeration engineer.

We made stopovers in Hawaii, Guam, Manila, Singapore, Hong Kong, Bangkok, New Delhi—with a side trip to Agra—then Bombay, Karachi, Teheran, Baghdad, Beirut, Athens, Rome, Zurich, Paris, Amsterdam, with a side trip to the World Exhibit in Brussels, on to London, and Copenhagen, returning via the

direct Polar Route to Los Angeles.

I may say that in every country in the Pacific, the Far East, India, and the Near East there is an excellent market for those manufacturers who aggressively appoint distributors qualified to handle their engineering products. The major American manufacturers of compressors, air conditioning, and refrigeration equipment are generally represented in the different countries, and in most cases the lines are well handled.

Chinese Restaurants, Night Clubs Too Cold

There are, of course, always exceptions to the rule, and especially in some large Chinese restaurants and night clubs in Hong Kong we found some very bad conditions with a temperature so extremely low and the air velocity so high that it is impossible for anyone to relax and have an enjoyable evening.

We had a well-known banker from Los Angeles with his wife as our guests, and we had to leave those two places as we simply couldn't stand it. Well dressed Chinese ladies were dancing around with heavy sweaters. My friend, Hy Jarvis, who as all of us know is very soft hearted, was especially sorry for the lovely Chinese girls as their sweaters certainly did not cover some most attractive legs showing through the vulnerable slit skirts. . . .

Manufacturer Should Set Standards

We observed similar conditions of extremely low temperature and high air velocity in a few other restaurants and eating places and it is my candid opinion that the industry has an obligation that they had better do something about and that is to set up some standard beyond which their distributors are not allowed to go without losing their franchise.

I refer specifically to exces-

sive air velocity to discharge grilles and extremely low temperatures in air conditioned spaces. After all, who knows better than the large equipment manufacturer what conditions should be maintained? If the distributor will not comply with the standard set by the manufacturer, he should lose his franchise.

Recold coils have been used in many large cold storage plants in Hong Kong and Recold air handling units have been installed in Government House, several banks, buildings, theaters, etc. A fine installation has been made by our distributors in Bangkok, Thailand, in the beautiful, up-to-date, and modern Erawan hotel, which provides air conditioned guest rooms where the air velocity can be changed.

It was our pleasure to attend the opening of the American International Assurance building, right now undoubtedly the most modern and striking building in Singapore, with Recold air handling units on each of the 11 floors and two large Worthington centrifugal refrigerating units installed on the twelfth floor. This is the first centrifugal installation in Singapore.

The new and beautiful Ashoka hotel in New Delhi, India, is one of the best examples in that part of the world of what real good American air conditioning should be. While in New Delhi we had the privilege of visiting the new American Embassy, an amazingly beautiful building which is being completely air conditioned with Trane equipment.

Indian Materials, Labor Used

Here is one example where American taxpayers' money is being well spent. Every piece of material used comes from India. The labor is all done by Indians and I would take a guess that this marvelous building with the different annexes containing the apartments for the staff, could not be duplicated here in the U. S. A. for four times the amount spent.

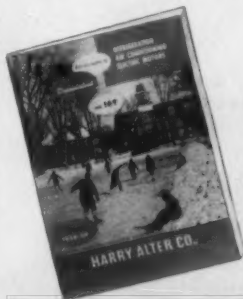
India needs air conditioning more than any country with which I'm familiar. It is regrettable, however, that the financial situation in the country is such that importation at present is practically prohibited. The result is that equipment is leaking in from European countries who are giving five-year terms, and although the prices are higher, it makes it possible in some cases, to import refrigeration and air conditioning equipment from Western Germany, Denmark, Britain, and other European countries.

Shouldn't American Money Be Used To Import from U.S.A.?

At this time I would like to bring out one point about which we and other American businessmen are becoming perturbed about. Our foreign aid program spends billions of dollars on various aid projects in foreign countries. Wouldn't it be logical that if our country furnishes American taxpayers' money to assist those countries in building up their standard of living, that if any equipment or machinery is imported, it should be American made? That way,

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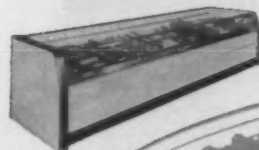
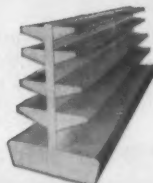
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SATAM
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IN MEXICO—
American Refrigeration Products
S. A. de C. V., Orinoco 78
General Anaya, Mexico 13, D. F.

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Sydney, Australia

part of the money would come back to us.

We have seen too many cases where American money was spent to import British, Danish, Dutch, French, and West German equipment, and as a matter of fact, there are even a few cases where equipment was imported from Czechoslovakia and East Germany.

India and the Near East are practically still untouched as far as the possibilities for our industry are concerned.

However, the closer we get to Europe, the nearer we also come to the steadily increasing European competition. German, British, and other European manufacturers of air conditioning and refrigeration equipment are making their appearance in the export field.

Thus far they are mostly specializing, but we may be prepared that within a few years we will have strong competition. In Manila we visited an important cigarette factory which was completely air conditioned and dehumidified with German equipment. Several textile mills in India and Pakistan are already cooled and dehumidified by German air conditioning equipment.

Near East Has Terrific Potential

If Mr. Nasser would decide to leave the Near East alone, I would say that there are terrific possibilities for our industry in that section of the world; however, here again manufacturers must consider that very few of the local engineering firms are in a position to do the right job and we must not forget that the name of our industry can be spoiled awfully easily if the equipment gets in the wrong hands.

Faulty installation and poor service of American equipment are a direct blow to our industry and our European competitors will be watching us like a hawk and will take advantage of any little mistake we Americans make.

One final comment, and that is that on this trip as well as on my former visits to countries all over the world, there was found a great demand for American manufactured products, refrigeration, automotive, electronic, or whatever it may be.

Payment Terms Are Hurting Export Trade

If we are losing out in export it is not because our goods are not wanted. It is mainly because of payment terms. European manufacturers especially, and that also goes for Japan, are selling on from three to five-year terms, and of course many of those countries have the advantage of government export insurance.

Also, don't let anybody say

that all over the world Americans are disliked. Hy Jarvis and I have found nothing else but goodwill and friendship wherever we went. That there are Americans that are disliked is no wonder if you see the way some of them behave—arrogant, acting important, waving the American flag and the American dollar in everyone's face. But then there are good and bad Indians, good and bad Frenchmen, and of course, with millions of Americans traveling all over the world there are always a certain percentage of obnoxious Americans.

We get what we give. Any American who understands that a Thai is just as proud of Thailand, an Indian just as proud of India, an Iraqi just as proud of Iraq, as we are of America, and who treats people with respect, dignity, and equality, will be treated exactly the same way wherever he chooses to travel.

American Firms Must Sit By and Watch Others Get Certain Export Business, Jarvis Reports

(Some of the personal observations of H. T. (Hy) Jarvis, president of Recold Corp., who accompanied Albert Rebel on the Around-the-World trip, are recorded here.)

American-manufactured air conditioning and refrigeration products are being used in an increasing variety of applications, as well as in increasing volume, in foreign countries.

To my surprise I found our RE units being used to condition race horse stalls in Singapore, and was told that "air conditioned" thoroughbreds are the most consistent winners.

In Bangkok, a Chinese noodle

factory uses our Delta units. The noodles are processed, then refrigerated for 24 hours. Then they are hung on "clotheslines" outside in the sunlight—just like freshly washed shirts.

The people I met and the places I visited in Manila, Singapore, Hong Kong, Bangkok, New Delhi, Karachi, Teheran, Baghdad, and Beirut led me to believe that there is a vast, untapped market for air conditioning and refrigeration equipment in the Far East, India, and the Near East.

The opportunities are excellent—if proper contacts can be made. However, India will favor those American firms which

plan to build there.

In India I heard considerable talk about doing business with Red China with American goods bought for India.

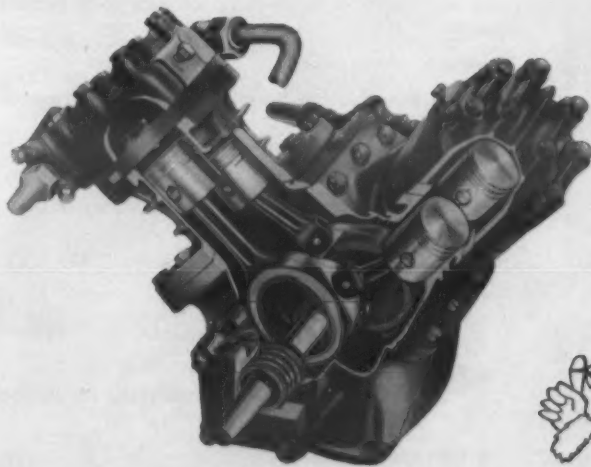
The businessmen's attitude seems to be, "Why not?" They point out that the U. S. will not do business with the Communist regime, but Great Britain does. "So," they add, "since we can make a profit, why not?"

We are creating a large demand for products of all types. But despite the fact that we put up the money every effort seems to be directed toward the purchase of equipment from our allies, notably West Germany and Great Britain.

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TECHNICAL CENTER

By Frank J. Versagi, Technical Editor

Foreign Technical Studies, Developments

The following brief reports abstracted from foreign trade journals give an idea of what is being done and thought of outside the United States.

AUSTRALIA—Reciprocating and rotary compressors completely dominate the field of 50 tons' capacity or less. Though centrifugals perform satisfactorily at 50 tons, they are best suited for applications of 75 tons and over.

"Where it is likely that a highly variable compression ratio will be needed, the reciprocating compressor has the advantage that it is practical to operate at any ratio up to about 10 to 1—compared with the

maximum compression ratio of about 4.5 to 1 for a single-stage centrifugal compressor.

"Service and maintenance requirements of centrifugal compressors are negligible in comparison with reciprocating compressors."

GERMANY—A step forward has been taken in solving the problem of detecting refrigerant leaks in an explosive atmosphere, as in coal mines.

An "explosion-proof" leak detecting lamp is described which, while using the basic principle of the halide torch, cools the combustion gases to a temperature below the ignition temperature of most surrounding atmospheres.

Developed by Linde's Eismaschinen A.G., the lamp makes use of two gauzes and a hand-operated aspirator bulb. The air is taken in through the lower part of the gauze, cooling the glass, and then leaves through the upper part—passing the flame on the way.

It is expected the lamp will be found useful in chemical industries where explosive atmospheres are frequent and in checking for methyl chloride leaks.

Questions bothering refrigeration engineers know no political boundaries. World-wide are problems having to do with automation of cold storage equipment, design of new cooling systems, gas storage of fruits, antibiotics and refrigeration, irradiation of foods, heat pumps, isothermal refrigerated transport, and quick freezing of foods.

World-wide discussion of

some of these problems is possible at international meetings such as the meetings of Technical Board and of Commissions 3, 4, and 5 of the International Institute of Refrigeration to be held in Moscow, Sept. 1-6, this year.

In August, 1959, the tenth International Congress of Refrigeration will take place in Copenhagen.

ENGLAND—Stray currents, even on systems supplied with alternating current, can be a corrosion problem in brine systems. A study of several brine systems has led to the conclusion that maximum protection against corrosion is obtained by:

1. Minimizing aeration of the brine. Smooth flow and circulation—and their relation to piping design—are considered.

2. Providing and maintaining clean, clear brine. The piping system should be thoroughly

cleaned; chemicals in the brine should be pure. Continuous filtering of the recirculating brine is important.

3. Canceling out effects of stray currents—by insulation, pH control, proper selection of pipe and flange materials.

RUSSIA—Producing butter in a consistency which does not deteriorate on prolonged cold storage is the result of a study of refrigerated treatment and storage of butter produced by a continuous process. The report is devoted to a study of sub-zero Centigrade temperatures (23°, 14°, 7°, and 0° Fahrenheit).

The consistency of stored butter was found to depend mainly on cooling conditions for the high fat cream in the butter chiller.

INDIA - BRAZIL—Literature in these countries reflects an active desire to catch up with more developed countries in the fields of refrigeration and air conditioning. Periodicals like *Heat Exchanger* in India and *Refrigeracao* in Brazil deal with fundamentals of refrigeration cycles, motors, corrosion. Some editorial material is supplied by American companies or publications like the NEWS.

DENMARK—Tests here at least partially disagree with earlier findings of Dr. Steinle (Germany) relative to the use of a polymeric butylic ether of silicic acid as a lubricant in Refrigerant-22 compressors.

Butylic ethers may lead to heavy wear and copper-plating according to tests corresponding to 1-2 years' running time in this country.

GERMANY—A special plastic valve seat and a natural agate needle make the most durable combination for expansion valves, according to tests reported by Ernst Flitsch, Stuttgart. Other combinations tested were: stainless steel needle and bronze seat, stainless steel needle and special plastic seat, natural agate needle and bronze seat.

(EDITOR'S NOTE: Although a few American valves have the seat machined into a bronze body and use a stainless steel needle, the more universal arrangement is stainless steel-stainless steel—a combination which was not included in the German report.)

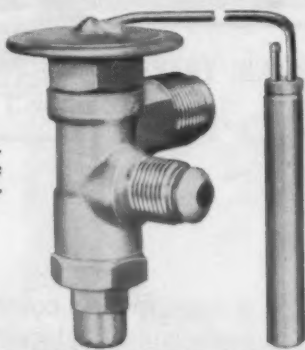
The four expansion valves mounted on four similar evaporators which were manifolded to a common liquid and a common suction line—an arrangement which in effect allowed the same quantity and quality of refrigerant

(Concluded on next page)

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An entirely different concept in expansion valves—the completely new No. 717 and No. 718. Each of these valves is designed with a minimum of moving parts, to provide a more compact unit with greater capacity.

These new valves offer:

- **The Smallest Valves Per Ton Of Refrigeration**
Broader use in more limited spaces.
- **Close Superheat Control**
Minimizes surge for maximum valve operating efficiency.
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½ to 3 tons R-12
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L, C and Z charges available.
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- **Connection Sizes**
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½ S.A.E. Outlet.

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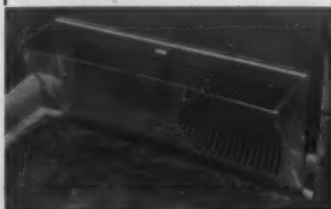


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Foreign Studies--

(Concluded from preceding page)
erant to flow through all four valves.

Natural agate and special plastic stood up best under high-velocity refrigerant liquid stream and flash gas, moisture, and impurities, according to Flitsch.

GERMANY — A 12-volume handbook of refrigeration, *Handbuch der Kältetechnik*, is under development. Several volumes have already appeared. Many international authorities consider the series to be the most comprehensive collection of refrigeration knowledge in the world.

USA—In this country, American Society of Refrigerating Engineers is re-doing its well-known Data-Book. Plans call for the new work to be divided into four volumes.

- I Refrigeration Applications
- II Air Conditioning Applications
- III Refrigeration and Air Conditioning Equipment
- IV Tables and Fundamentals.

ITALY — A full review of world-wide practice in the use of refrigeration in milk collection and in manufacture, storage, and delivery of dairy products is given in several 1957 issues of the Italian Journal, *Il Freddo*.

SWEDEN—Theoretically and mathematically there can be no such things as negative numbers on an absolute scale. Great interest is being shown in some experiments and computations which show the possibility of negative absolute temperatures—temperatures below absolute zero.

Experimentation, so far, is on the atomic level.

EUROPE, in general, seems preoccupied with ultra-low temperatures. By our standards, a disproportionate amount of their literature deals with work near absolute zero.

HELP WANTED?

I'm an expert with years of world wide experience. In fact, wherever refrigerators, freezers or air conditioners are repaired by smart businessmen, you'll find me. My name is Frankell's Hermetic Compressor Opener. I can open any shape compressor (up to 20" in dia.) regardless of the weld. And best of all, I take only two minutes of your time to do it! Or any one's time for that matter — I'm that easy to operate — No Gimmicks! No Fixtures! No Jigs! Remember, when you open and repair a hermetic compressor, the profits are big. And just one hermetic job a week and I'm paid for in full. I'm recommended by the world's leading firms. These are just a few of my references: American Motors Corp., Kelvinator Div., Detroit, Mich.; Siemens, Erlanger, West Germany; Sealed Unit Parts, N.Y.C.; Tecmar-Carrier, Mari-cabo, Venezuela; Jones Refrigerator Co., Raleigh, No. Carolina, and many more. I cost only \$695 net F.O.B. N.Y. or I can be rented monthly for an amazingly low cost. Write for complete information today. Write Dept. G Frankell Manufacturing Co., Inc., 1074 Home St., N.Y. 59, N.Y.

Export Facilities

You Asked About It

From the many requests for information it receives, the News will select and publish some of general interest. In many instances, the answers will be supplied by authorities in the industry.

Q. Here below the Border we use thousands of Servel and Swedish Electrolux absorption refrigerators, and we have to service them. Our company has successfully done this and we give a five-year guarantee on our work.

However, one thing bothers me. When the hydrogen is let out of a system, is there any likelihood of an explosion during later welding or brazing due to the little hydrogen which might be left in the unit?

This is an important question since I tend to blow hydrogen out through the charging valve, make a weld on a small leak for example, then recharge with hydrogen. This saves consid-

erable time, but is it safe?

J.H.H.—Salvador, Bahia, Brazil

A. J. C. Parker, manager of service operations, Whirlpool Corp., which now handles Servel service, answers that Servel units were designed for complete removal and replacement; repairs were not to be attempted on the sealed units.

However, in cases such as South America where complete replacement may be inconvenient or impractical, it is conceivable that servicemen will break into these units.

To answer the specific question, Parker strongly recommends that the unit be evacuated so that it is completely free of hydrogen before brazing.

Taper Face Flange Ratings Upgraded By Tube Turns

LOUISVILLE, Ky.—New ratings broadening the service range of its lightweight forged steel taper face welding neck flanges were announced by Tube Turns Div. of Chemetron Corp.

On the basis of extensive fatigue and bending tests under simultaneous pressure, the flange is now recommended for 175 p.s.i. liquid, gas, or air service at 150° F., it was stated. Originally the flange was rated at 125 p.s.i. WOG (water, oil, and gas). It is now rated suitable for 125 p.s.i. dry saturated steam at 353° F.

The new ratings correspond with the steam rating of Class 125 cast iron or "semi-steel" valves, substantially increasing

the range in which the flange can be used in steam service, company officials said.

The new data makes it possible to extend use of the Tube-Turn lightweight taper face flange to heating, air conditioning, and general service piping installations, within the scope of these pressure ratings.

'Hire an Apprentice,' Gov. Knight Urges

SACRAMENTO, Calif. — "Hire an Apprentice," Governor Goodwin J. Knight urges. He has issued a proclamation on designating July as Apprenticeship month in California.

"At no time in our nation's history has the need for mechanical and scientific skills been more important," Knight said in his proclamation which states 20,000 young citizens are serving apprenticeships under the California program.

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1957 Refrigeration, Cooling, Heating Exports Rise \$9.25 Million

Air Conditioning Units Lead Increase In Foreign Shipments Of Industry's Products, Census Bureau Figures Indicate

WASHINGTON, D. C. — Although the vast bulk of American refrigeration and air conditioning products sold abroad comes out of foreign factories (either wholly owned, partially owned, or licensed by American manufacturers) we still ship overseas substantial quantities of items produced in stateside factories.

And these quantities are growing, as shall be seen later in this statistical compendium.

None of the figures which follow include output of American equipment manufactured abroad.

Major manufacturers such as Frigidaire, Carrier, York, West-

inghouse, General Electric, Kelvinator, Tyler, Bundy, Worthington, Copeland, etc., maintain factories all around the globe.

Sometimes they own these plants in whole or part; more often they license local makers to produce units according to their rigid specifications and design. These units proudly bear the American manufacturers' nameplates.

Despite the world-wide shortage of dollars, plus additional shipping costs, other U.S.A. manufacturers still find an export market for their goods.

Air conditioning, heating, and refrigeration industry exports from the U.S.A. during 1957

totaled \$240,797,459—up nine and one-quarter million dollars from 1956.

This increase was achieved in the face of an eight million dollar decline in domestic refrigeration products, which constitute the largest single group of industry exports. Exports of air conditioning units led the increase.

These export figures (as gleaned from Report No. FT 410—United States Exports of Domestic and Foreign Merchandise, issued by the Bureau of the Census) show that Canada accounts for almost one third of air conditioning, heating, and refrigeration exports.

Following are comparisons of 1956 and 1957 exports by product as well as a regional breakdown of the 1957 exports:

Air conditioning exports rose 14.1% over 1956 as shown in Table 1. Room units led the way with 17.4% increase in dollar value and a 17,335 increase in number of units. Canada with 20,509, Venezuela with 12,945, and Cuba with 12,232 units were the only countries importing over 6,000 room units from the U. S. Canada also was the leading export market for air conditioners and air handling units, and for self-contained air conditioners over 2 tons.

Table 1A shows the geographical breakdown of exports in dollar value. Asia is the leading market with 33.6% of the total exports followed by Central America and the Caribbean with 18.6%, and Canada with 17.6% of the total market.

Commercial refrigeration exports are detailed in Tables 2 and 2A. Dollar-wise, commercial refrigeration shipments were up 12.6% over 1956 with the largest dollar increase coming in Self-Contained Commercial Refrigerator shipments, while Liquid Coolers showed the greatest per cent of increase—33.1%.

Canada, Venezuela, Cuba, and West Germany were the top importers of U. S. commercial refrigeration equipment. By geographical regions Canada led with 35.7% of the total, while South America with 20.8% of total, and Central America with 16.9% of the total followed.

Tables 3 and 3A show Heating Unit and Equipment exports. Heating exports gained 8.5% during 1957 although Boilers and Warm Air Furnace shipments of all types declined. Heat Exchanger and Steam Specialty exports rose one third to \$15,974,337. Great bulk of the furnace and boiler exports go to Canada, in fact 42.4% of all heating exports are to (Continued on next page)

Explanation of the Regional Breakdown Utilized in the Accompanying Tables

Region	Countries Included
Canada	Canada Only.
Central America	Mexico, Central American Countries, Cuba, Caribbean Islands, West Indies, Bahama Islands, Bermuda, Dominican Republic, Haiti, Trinidad.
South America	South American Countries Only.
Europe	All European Countries, Islands Immediately Adjacent such as Iceland, Azores, Great Britain.
Asia	All Asian Countries, Islands Immediately Adjacent such as Japan, Philippines, Indonesia.
South Pacific	Australia, New Zealand, all South Pacific Islands.
Africa	All African Countries, Islands Immediately Adjacent such as Canary Islands, Madagascar.

Table 1—Air Conditioning Exports

Product	1956		1957		Increase 1957 Over 1956
	No.	Value	No.	Value	
Air Conditioners & Air Handling Units	29,790	\$ 5,219,419	40,681	\$ 5,868,131	\$ 648,712
Room Air Conditioners Under 2-Ton					
Self-Contained	94,602	18,497,261	111,937	21,710,086	3,212,825
Air Conditioners, Self-Contained, 2 Tons & Over	6,178	6,465,457	6,026	6,864,972	399,515
Total	130,570	\$30,182,137	158,644	\$34,443,189	\$4,261,052

Table 1A—Air Conditioning Exports by Geographical Regions

Region	Air Conditioners and Air Handling Units	Room Air Conditioners Under 2 Tons, Self-Cont.	Air Conditioners Self-Cont. Over 2 Tons	Total
Canada	\$1,438,185	\$ 3,185,535	\$1,442,800	\$ 6,066,520
Central America	1,162,740	3,870,653	1,360,144	6,393,537
South America	668,404	3,097,410	1,120,109	4,885,923
Europe	512,526	918,315	550,344	1,981,185
Asia	1,704,246	7,941,038	1,930,297	11,575,581
South Pacific	24,381	40,416	20,825	85,622
Africa	357,649	2,656,719	440,653	3,455,021
Total	\$5,868,131	\$21,710,086	\$6,864,972	\$34,443,189

Table 2—Exports of Commercial Refrigeration Equipment

Product	1956		1957		Increase 1957 Over 1956
	No.	Value	No.	Value	
Ice Making Machinery and Equipment		\$ 2,128,394		\$ 2,082,195	—\$46,199
Commercial Refrigerators and Freezers, Self-Contained	35,983	11,032,901	40,292	12,439,492	1,406,591
Liquid Coolers	1,654	2,048,167	2,609	2,727,014	678,847
Commercial Refrigerators Not Self-Cont.	8,719	5,592,377	8,849	6,182,270	589,893
Total	46,356	\$20,801,839	51,750	\$23,430,971	\$2,629,132

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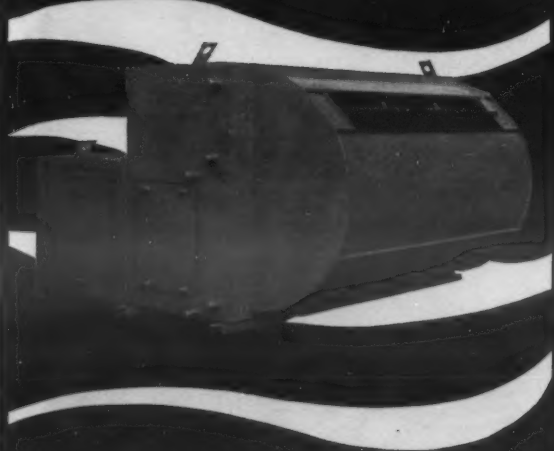
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Table 2A—Commercial Refrigeration Exports by Geographical Regions

Region	Ice Making Machinery	Commercial Refrigerators and Freezers Self-Cont.	Liquid Coolers	Commercial Refrigerators and Freezers Not Self-Cont.	Total
Canada	\$ 366,542	\$ 4,014,720	\$1,274,345	\$2,714,955	\$ 8,370,562
Central America					
America	908,703	1,903,432	287,965	853,384	3,953,484
South America	317,187	2,782,838	259,362	1,522,266	4,881,653
Europe	101,885	1,679,558	203,331	419,382	2,404,156
Asia	378,015	1,346,428	467,822	487,308	2,679,573
South Pacific	1,000	37,451	12,996	20,086	71,533
Africa	8,863	675,065	221,193	164,889	1,070,010
Total	\$2,082,195	\$12,439,492	\$2,727,014	\$6,182,270	\$23,430,971

Table 3—Exports of Heating Units and Equipment

Product	1956 No.	1956 Value	1957 No.	1957 Value	Increase 1957 Over 1956
Heat Exchangers and Steam Specialties...	...	\$ 9,988,369	...	\$15,559,685	\$5,571,316
Boilers, Warm Air Furnaces, Radiators, Parts	...	9,491,538	...	8,611,624	—879,914
Oil Burners, Domestic	44,377	4,839,593	35,620	3,873,793	—965,800
Oil Burners, Industrial	4,966	1,822,928	4,689	1,635,359	—187,569
Oil Burner Parts (615,220)	...	4,368,196	...	3,407,745	—960,451
Heating Equipment and Parts	...	4,172,866	...	4,578,366	405,500
Total	49,343	\$34,683,490	40,309	\$37,666,572	\$2,983,082

Table 3A—Heating Equipment Exports by Geographical Regions

Region	Heat Exchangers	Boilers, Warm Air Furnaces	Oil Burners, Domestic	Oil Burners, Industrial	Oil Burner Parts	Heating Equipment and Parts	Total
Canada	\$ 2,403,265	\$6,874,516	\$ 659,992	\$ 622,550	\$1,735,306	\$3,678,708	\$15,974,337
Central America	3,388,533	440,487	104,848	138,682	172,128	147,573	4,392,251
South America	3,883,621	312,750	495,872	181,429	112,839	168,841	5,155,352
Europe	2,141,015	375,704	2,326,926	487,883	1,174,660	244,487	6,750,675
Asia	3,292,540	571,023	250,970	204,265	166,788	320,947	4,806,533
South Pacific	128,160	13,228	23,018	550	35,446	4,520	204,922
Africa	322,551	23,916	12,167	...	10,578	13,290	382,502
Total	\$15,559,685	\$8,611,624	\$3,873,793	\$1,635,359	\$3,407,745	\$4,578,366	\$37,666,572

Table 4—Exports of Compressor and Condensing Units over 1/2 Hp. Compressor and Condensing Units

Product	1956 No.	1956 Value	1957 No.	1957 Value	Increase 1957 Over 1956
Compressor and Condensing Units					
1/2 through 1 hp.	111,109	\$ 6,918,096	132,841	\$ 7,623,733	\$ 705,637
Over 1, through 3 hp.	7,881	1,990,237	9,006	2,204,041	213,804
Over 3, through 10 hp.	3,902	2,146,366	4,459	2,311,583	165,217
Reciprocating Compressor and Condenser					
10 through 30 hp.	1,109	1,436,828	1,519	1,792,510	355,682
Over 30 hp.	1,041	2,917,702	1,087	3,266,230	348,438
Centrifugal Refrigerating Units	90	2,598,459	118	3,344,439	745,980
Steam Jet and Absorption Units	158	582,837	262	796,249	213,412
Total	125,290	\$18,590,615	149,292	\$21,338,785	\$2,748,170

Table 4A—Exports of Compressor and Condensing Units over 1/2 Hp. By Geographical Region

Region	1/2 to 1 Hp.	1 to 3 Hp.	3 to 10 Hp.	10 to 30 Hp.	Over 30 Hp.	Centrifugal	Steam Jet and Absorption	Total
Canada	\$1,772,374	\$ 842,239	\$ 733,994	\$ 324,045	\$ 510,427	\$1,134,211	\$305,634	\$ 5,622,924
Central America	893,675	277,722	396,320	179,484	522,739	233,124	219,297	2,722,361
South America	987,051	333,664	346,787	155,718	576,116	225,693	5,274	2,630,305
Europe	2,491,664	296,901	400,557	510,405	392,828	663,120	204,710	4,960,185
Asia	1,121,743	263,049	303,559	467,644	930,725	965,665	61,334	4,113,719
South Pacific	30,175	5,468	26,603	69,232	135,875	11,117	...	278,473
Africa	327,048	184,998	103,763	85,982	197,518	111,509	...	1,010,818
Total	\$7,623,733	\$2,204,041	\$2,311,583	\$1,792,510	\$3,266,230	\$3,344,439	\$796,249	\$21,338,785

Table 5—Exports of Cooling Towers and Condensers

Products	1956 No.	1956 Value	1957 No.	1957 Value	Increase 1957 Over 1956
Cooling Towers and Pond Units and Parts	...	\$1,963,868	...	\$2,901,907	\$ 938,039
Evaporative Condensers	951	1,103,308	1,070	1,090,063	—13,245
Condensers Except Evaporative	807	501,521	942	678,254	176,733
Heat Transfer Equipment and Parts	...	3,832,113	...	4,328,297	496,184
Total	1,758	\$7,400,810	2,012	\$8,998,521	\$1,597,711

Table 5A—Exports of Cooling Towers and Condensers By Geographical Regions

Region	Cooling Towers	Evaporative Condensers	Not Evaporative	Heat Transfer Equipment	Total
Canada	286,073	\$ 222,925	\$ 55,902	\$1,017,746	\$1,582,646
Central America	1,435,588	222,289	169,784	432,782	2,260,443
South America	372,828	207,755	172,828	1,286,097	2,039,508
Europe	207,214	56,055	59,701	250,752	573,722
Asia	513,002	323,486	202,482	1,146,381	2,185,351
South Pacific	3,665	14,366	18,031
Africa	87,202	57,553	13,892	180,173	338,820
Total	\$2,901,907	\$1,090,063	\$678,254	\$4,328,297	\$8,998,521


Export Sales--

(Continued from preceding page)
Canada—with Europe accounting for 17.9%.

The value of Compressor and Condensing units as shown in Tables 4 and 4A rose 14.8% over 1956 with major increases coming in those units 1/2 to 1 hp. and in Centrifugal Refrigerating Units. Canada took 26.4% of these shipments while Europe had 23.2%, and Asia had 19.3% of compressor and condensing unit shipments.

Tables 5 and 5A show that the export market for Cooling Towers, Condensers, and Heat Transfer equipment increased 21.6% over 1956, with cooling tower shipments rising 47.8%, Evaporative Condensers down 1.2%, and Condensers, except Evaporative, up 35.2%. Central America and the Caribbean

(Concluded on next page)




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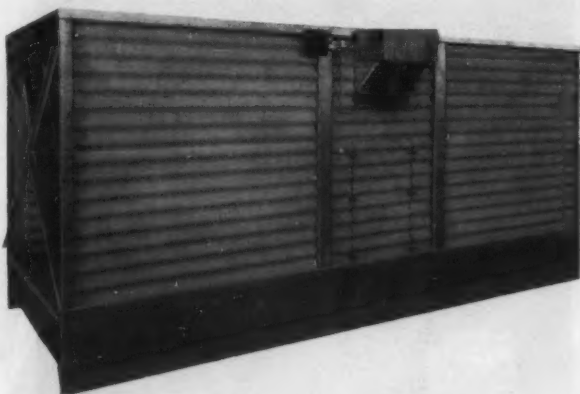
Table 6—Exports of Refrigeration and Air Conditioning Parts and Supplies

Product	1956 Value	1957 Value	Increase 1957 over 1956
Air Conditioning and Refrigeration Auxiliary Equipment and Accessories	\$ 5,804,595	\$ 5,825,258	\$ 20,663
Air Conditioning and Refrigeration Parts for Foreign Manufacture	4,703,461	5,233,182	529,721
Air Conditioning and Refrigeration Replacement Parts	5,032,083	5,575,890	543,807
Controls, Regulators, Etc. for Air Conditioning and Refrigeration	14,197,466	15,465,087	1,267,621
Total	\$29,737,605	\$32,009,417	\$2,261,812

Table 6A—Exports of Air Conditioning and Refrigeration Parts and Supplies

Region	Auxiliary Equipment	Parts for Foreign Mfg.	Replacement Parts	Controls, Regulators, etc.	Total
Canada	\$2,516,683	\$1,938,992	\$1,329,807	\$ 6,547,110	\$12,332,392
Central America	897,314	729,102	936,061	1,149,320	3,711,797
South America	663,200	369,345	802,595	1,115,024	2,950,464
Europe	351,638	1,246,347	542,863	4,557,704	6,698,552
Asia	1,108,138	865,006	1,554,337	1,285,156	4,812,637
South Pacific	118,345	43,465	82,825	534,244	778,879
Africa	169,940	40,925	327,302	276,529	814,696
Total	\$5,825,258	\$5,233,182	\$5,575,890	\$15,465,087	\$32,009,417

LITTLE DETAILS MAKE BIG ADVANTAGES IN Havens COOLING TOWERS



Here they are... Count 'em!

1. All parts double dipped galvanized with over 2-oz. of Zinc per square foot of surface.
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4. Fan shafts on small models are stainless steel, ground to 10 micro inches. Larger model shafts are heavy zinc plated cold rolled steel.
5. Fan shaft bearings run in continual oil bath with provision for collection of water and impurities in a sump. Oversize bearings are used on all models.
6. Bearings can be externally lubricated. An oil cup, connected to bearing with transparent nylon tubing permits visual inspection. Capacity 3 ounces.
7. Available without steel basins and shipped assembled—for setting on concrete basin.
8. Models available in capacities from 3 to 600 tons.

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Export Sales--

(Concluded from preceding page)
area, Asia, and South America rank one, two, three in the market for this equipment, with Mexico being the top country in dollar value of these exports.

Exports of Refrigeration and Air Conditioning Parts and Supplies are detailed in Tables 6 and 6A. Parts for foreign manufacture rose 11.3% while Controls and Regulators for Air Conditioning and Refrigeration gained \$1,267,611. Canada had 38.4% of these exports while European countries took 20.9% of this market.

Table 7 shows export of Blowers for 1957 declined 4,000 units although dollar volume rose 10.6% with Axial Blowers gaining 77.7% in dollar volume.

Canada leads in Centrifugal and Axial Blowers—India in Turboblenders.

Domestic Refrigeration Equipment declined 9.2% over-all. As shown in Table 8 this decline was most serious in replacement parts—down 22.3% and in Compressor and Condensing units under 1/2 hp.—down 17.4%. Refrigerator exports were off 5.6% and freezers 5.1%.

Complete Mechanical Refrigerating Systems were up 18.8% in dollar value. Canada, Venezuela, and Cuba lead in the import of U. S. Domestic Refrigerators while Canada, Sweden, and Venezuela top the countries importing U. S. Domestic and Farm Freezers.

Table 7—Exports of Blowers

Product	1956		1957		Increase 1957 Over 1956
	No.	Value	No.	Value	
Centrifugal Blowers	16,928	\$2,384,503	12,112	\$2,402,151	\$ 17,648
Axial Blowers	1,046	504,443	1,230	896,212	391,769
Turbo Blenders	523	1,269,782	816	1,403,433	133,651
Total	18,497	\$4,158,728	14,158	\$4,701,796	\$543,068

Table 8—Domestic Refrigeration Exports

Product	1956		1957		Increase 1957 Over 1956
	No.	Value	No.	Value	
Elec. Domestic Refrigerators	318,110	\$51,114,723	298,429	\$48,267,963	—\$2,846,760
Elec. Domestic Freezers	55,805	10,344,105	53,605	9,812,030	—532,075
Complete Domestic Refrig. Systems, Mechanical	22,922	1,374,748	28,557	1,633,615	258,867
Domestic Refrigr. and Freezer Parts	14,771,312	11,474,164	—3,297,148
Compressor and Condenser Units Not over 1/2 Hp.	331,834	8,387,332	271,904	6,930,436	—1,456,896
Total	728,671	\$85,992,220	652,495	\$78,118,208	—\$7,874,012

Swiss Warehouse Gets Brunner Compressors

WINTERHUR, Switzerland—A. Schellenbaum & Co. here has installed Brunner compressors for the air conditioning plant at the new Glarner warehouse in Schaffhouse, Switzerland.

Two Brunner compressors, type NR20, are installed with a total output of 440,000 B.t.u., which are controlled in eight steps.

Behind the "romantic" facade of the warehouse, retained to blend harmoniously with the other houses of the city, are modern big selling-rooms complete with air conditioning.

TYPE 56

R-12 to R-22

...with the twist of a wrist!

From 60 to 270 psi

Now made in 1" size
...in addition to 3/4", 1/2", and 3/8".

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Refrigeration Problems And Their Solution

(As Written by Paul Reed)

The late Paul Reed, one of the refrigeration industry's most respected writers and teachers, wrote a column on "Refrigeration Problems and Their Solution" which was published regularly in AIR CONDITIONING & REFRIGERATION NEWS for more than 15 years.

Readers throughout the years have hailed this written material as some of the most practical and helpful that has ever been published. Fortunately, the author had an opportunity to revise some of this material and the NEWS is currently re-publishing it.

Electric Solenoid Valves (5)

MAXIMUM PRESSURE DIFFERENTIAL AGAINST WHICH THE SOLENOID VALVE MUST OPEN

Regardless of the capacity and pressure-drop of the solenoid valve while it is open, the valve must be able to open against the pressure on the high pressure side of the valve.

More accurately, the valve must be able to open against the pressure difference on the two sides of the valve when the valve is in its closed position.

The solenoid valve must therefore be selected on the basis of where it is to be used in the system, and the maximum difference of pressure that may exist there, even under above-normal conditions.

The performance of the expansion valve will considerably affect the difference in pressures on the two sides of the solenoid valve, and consequently the power required to open the valve.

In the case of the liquid line solenoid valve, if the expansion valve tends to leak during the off cycle, the pressure on the downstream side of the solenoid valve may approach evaporator pressure.

Assuming that the solenoid valve itself holds tightly during the off cycle, the difference in pressure across the valve against which it must open, may be very high; that is, it may have to open against the full difference between condensing and evaporator pressures.

If the expansion valve holds tightly, the pressure difference on the two sides of the solenoid valve may be almost negligible, so it will open with the minimum power required.

The method of control will be a decisive factor. If the system is "pumped down" at the end of the running cycle, the liquid line solenoid valve must be able to open against the full difference between condensing and evaporator pressures at the start of the next running cycle.

If the system is not on a "pump down" arrangement, but for some reason a solenoid is used in the liquid line, and if the compressor is started directly by evaporator or suction pressure, and if the expansion valve holds tightly throughout the off cycle, the solenoid valve can open against almost negligible pressure difference on the two sides of the valve.

With the "pump down" cycle, or with any other arrangement that the solenoid valve must hold a high pressure on one side of the valve against a low pressure on the other side during the off cycle, the difference in pressure against which the solenoid must open at the start of the running cycle will be great, and will increase the difficulty in the solenoid valve opening.

In such a case, the solenoid valve must be selected for its ability to open against a high differential in pressure on the two sides of the valve.

As indicated earlier in this series, solenoid valves can be and are designed to open against high

pressure differences—up to 300 p.s.i.; but the greater this difference, the greater power the solenoid coil must have, and the smaller must be the orifice of direct-acting solenoid valves. Since the power of the coil is limited by practical considerations of size and cost, the alternative is to reduce the orifice size so as to increase the maximum pressure

difference against which the solenoid valve will open.

VOLTAGE

The lifting or opening power of solenoid valves is very susceptible to low voltage. The solenoid coils are designed with an under-voltage factor of about 10%; that is, they will open against a rated pressure difference at 10% below rated voltage, but only at rated conditions.

If the voltage is low, even only 5% low, the valve may have trouble in opening if the frequency of the current is off, or if the valve has been applied to a line in which the pressure difference across the valve is above that for which the valve was designed and rated.

Some solenoid valves are equipped with dual voltage coils, so that the solenoid valve can be used on either of two voltages, for example 115 volts and 230 volts. This is accomplished by splitting the coil into two coils, each with its two separate leads.

To use this solenoid valve on 115 volts, the two coils are connected in parallel; on 230 volts

the valves are connected in series.

The four leads are separately identified, usually by using different colored insulation. Care must be exercised in connecting these leads in accordance with the instructions furnished with the valve. If the coils are connected to "buck" one another, the valve will not only not perform properly, but the coils may burn out.

FREQUENCY

The solenoid valve coil is designed for a certain frequency current, for example 60 cycles per second, and will work best on that frequency. If used on a higher frequency, it will have less power and may fail to open. If used on a lower frequency, say 50 cycle, it will have greater opening power than on 60 cycle, but will overheat and may burn out.

Parts because of the widespread use of electric clocks and other timing devices depending for their accuracy on exact control of the frequency of the electric supply, it is rare in later years to find line frequency variation.

However, 50-cycle current is

still found occasionally in the United States, some in Canada, and is perhaps more common in foreign countries than any other frequency.

Some manufacturers therefore design their electric solenoid valves so that they may be used on either 50 or 60-cycle current. Actually the coils of these "dual frequency" valves are designed for about 55 cycles.

Although they have a little less power at 60 cycles than at 50 cycles, their ratings take this into consideration. For these valves it is even more important that the line voltage be correct and that the valve be properly selected and applied.

(To Be Continued)

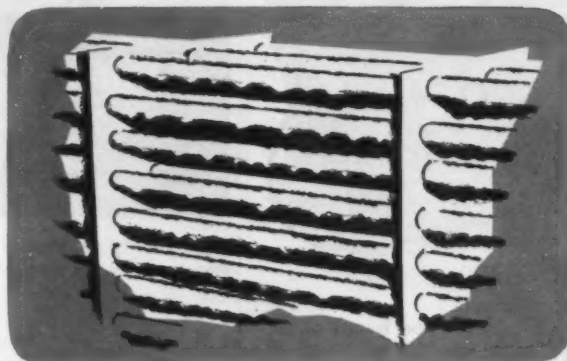
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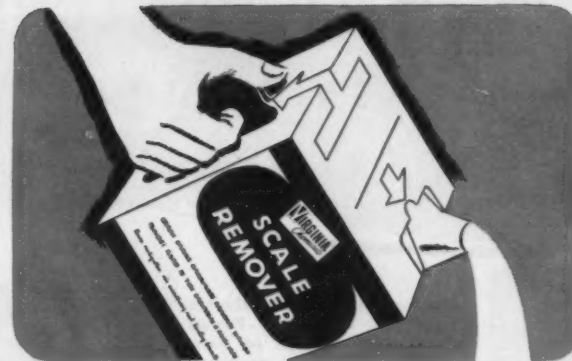
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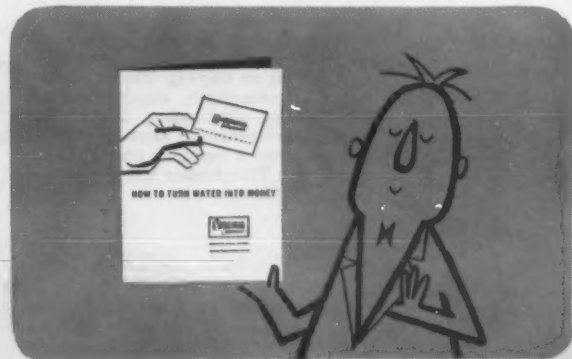
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A new moneymaker for service companies is the "Virginia" Water Treatment Plan. For details, get free folder, "How to Turn Water into Money." Write Refrigeration Division, VIRGINIA SMELTING CO., 189 Jefferson St., W. Norfolk, Va.

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Put Plants In India, Importers Urge

From Bombay to Bangalore, the Strangled Cry Is The Same

BOMBAY, India — Though American businessmen have participated in the development of India in various other spheres, it is sad to note that no one has come out in a big way in refrigerator or air conditioning.

So believes D. C. Baxter, proprietor of The Radiocrafters here.

"There is immense scope for refrigeration and air conditioning in a country like ours," he writes. "There is also immense scope for manufacturers with the ability and the facility to produce equipment which is acceptable to buyers in first low cost and good service."

Baxter gave a hint of the plight of importers in India where imports of complete refrigerators and air conditioners are entirely cut off.

"There are at present about three or four air conditioner manufacturers in this country," he declared. "These establishments, however, have their own sales and service facilities and do not in any way help the trade in general, especially small organizations that used to import on their own."

"At present, everyone is experiencing the greatest diffi-

culty in procuring either complete sealed units or dome assemblies.

"There are two manufacturers of refrigerators in Calcutta. Their production is very meager and cannot even meet local sales in Calcutta."

Baxter recalled that in the past his firm imported practically all makes of American refrigeration and air conditioning equipment. With the tightening of import licensing restrictions, activities were curtailed.

During 1957, he said, Radiocrafters imported Westinghouse air conditioners and refrigerators from the United States.

After that all imports have practically ceased. The firm now has no representation or distributorship. Currently it custom makes special refrigerators for blood banks and specialized industries.

"There is no way in which American manufacturers can serve us," he concluded. "But they can cooperate by starting a local industry especially in the home refrigerator trade by bringing in their capital and experience in making a refrigerator to fit every pocket."

BANGALORE, Mysore, India — India at present is very short of refrigeration equipment because of the difficult foreign exchange position and consequent drastic reduction in imports.

American manufacturers would do very well to start manufacturing refrigeration equipment in India in collaboration with local firms, asserts K. A. Philips of Coolwell Electrix. He believes "some schemes are coming up."

Coolwell Electrix distributes Kelvinator refrigeration and air conditioning equipment in Mysore and stocks and sells refrigeration fittings and controls made by American and Danish manufacturers.

The firm manufactures bottle coolers and storage cabinets and erects cold storage and air conditioned plants. It uses equipment manufactured by American, Kelvinator, Frigidaire, Carrier, Copeland, Melco, Dunham-Bush, McQuay, Detroit Controls, A-P Controls, Alco Valves, and Ranco.

Philip confessed a need for American made tools, but finds it practically impossible to import them.

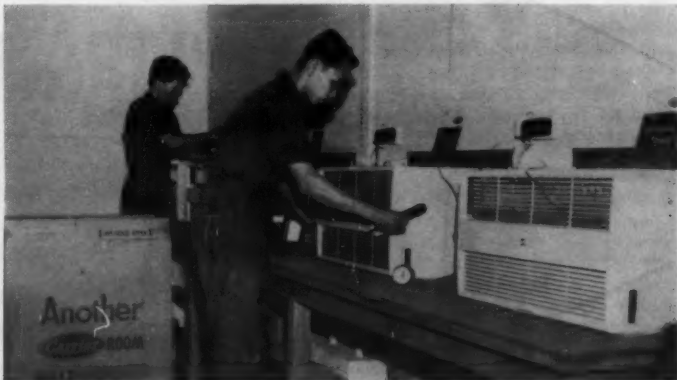
Working Round the Calendar



BUSY 24 HOURS A DAY, all-year-round in tropical, humid Singapore, International Air Conditioning Co., Carrier distributor, keeps in constant contact with its wandering servicemen through this two-way radio-telephone transmitter in the service department.



PART OF A FLEET of 10 radio-equipped trucks that can be dispatched on a new service call within seconds of finishing a job. The company has 58 servicemen at work and claims to have increased efficiency 30% per man with the radio-telephone equipment.



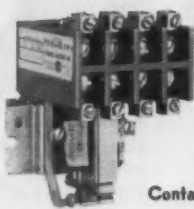
CHECKING OUT air conditioners brought into International Air Conditioning's service shop for repair. All units serviced are tested here before returning to the customer.

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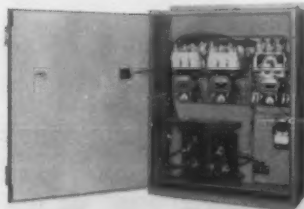
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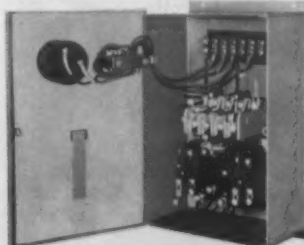


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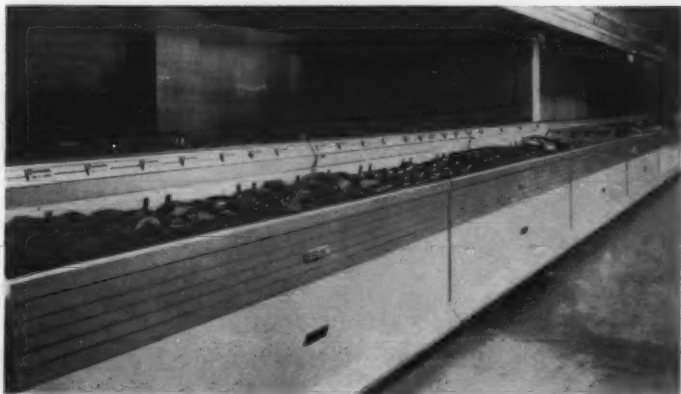
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64 FT. OF SHERER Australian built self-service refrigerated display went into the new Top Ryde Shopping Center in Sydney, New South Wales.

From Blueprint To Market In 6 Mos.

MARSHALL, Mich. — From blueprints in April of 1957 to food market installation in October of the same year is the remarkable record achieved by Sherer-Pennant Pty. Ltd., of Sydney, Australia, which manufactures the Sherer line of supermarket refrigerators for that continent, it was reported by Sherer-Gillett Co. here.

Considering the fact that much of the work done by machines in this country had to be performed by hand labor in Australia, the speed with which the prints have been transformed into finished and installed products is remarkable,

it was pointed out.

Cited was an installation made by a Sherer-Pennant dealer, Cutler Refrigeration Pty., Ltd., in the new Top Ryde Shopping Centre sponsored by A. J. Benjamin Ltd. consisting of 64 ft. of self-service refrigerated display.

The Top Ryde Centre was described in the Sydney papers as "a new concept in neighborhood shopping based on the success of American regional centres adapted to Australian conditions, and has been evolved to recapture the carnival atmosphere of the old European market places."

Shopping Centers Next?

Europeans Like Supermarket Shopping, Want American-Style 'Gear' In Them

CHICAGO — "People in Europe want to shop for food in American-style supermarkets, and European retailers want American-style refrigerated fixtures in their markets."

That's the viewpoint expressed by recent observers of food retailing trends in Europe, including top executives of U. S. commercial refrigerator manufacturing companies.

"They want our 'gear' in their new markets," it was agreed by R. L. Tyler, president, Tyler Refrigeration Corp., and J. W. Krall, president, McCray Refrigerator Co., Inc., in commenting on the adoption of U. S. style commercial refrigerator equipment, while attending the annual meeting of the Commercial Refrigerator Manufacturers Association here.

Both manufacturing firms have taken steps to put such equipment into the European market. Tyler is now completing construction of a new manufacturing plant in Schwelm, Germany, in the Ruhr industrial area, which will use modern assembly line methods to produce refrigerated fixtures patterned after those made in Tyler's factories in the U. S. McCray has licensed the Eisfink Co., a veteran German manufacturer of refrigerator equipment,

to manufacture equipment using McCray's present designs.

Backing up these opinions are the fact that some 20 new supermarkets will have been opened in West Germany, Belgium, and France by the end of this year, and that plans are being considered for more projects of this type in the future.

The shopping center is also coming into the picture in European metropolitan areas. Opening this summer five miles from the downtown district of Antwerp, Belgium, was a new 100,000-sq. ft. shopping center with an American-style supermarket taking one of the biggest areas in the center.

Later this year a similar type center is expected to go up in West Germany.

One of the major barriers to the development of shopping centers and supermarkets in Europe has been the fact that a lack of automobiles together with inadequate public transportation facilities forced most of the populace to shop near their homes.

However, with a growing prosperity in Europe stepping up automobile ownership and improvement in public transportation growing steadily, people generally are tending to range further in their shopping trips.

Italy Refrigerator Production Rises

GENOA, Italy — Estimating that about 750,000 domestic refrigerators will be produced in Italy next year, G. Manari in the Bundy Dept. of Armco here says the outlook for future progress by home refrigeration in Italy is very good.

"A good increase in commercial refrigerators, deep freezers, etc., is also expected," he added. "Practically no production is planned for the time being for air conditioning."

Armco manufactures Bundy tubing under license. About half of its sales are destined to the refrigeration industry. The company also produces finished static wire condensers.

Competition by drawn steel tubes manufactured in Germany is one of the company's chief problems, Manari said.

Mexican Potential Big, But Finance, Rugged Climate Block Sales Today

MEXICO CITY, Mexico — "Mexico is developing very rapidly and a great part of it requires refrigeration. So it is not difficult to say that there is a large potential market for both household refrigeration and air conditioning as well as commercial refrigeration."

So reports A. Hernandez Ulloa, chief engineer for household appliances with Industria Electric de Mexico, S.A. here.

IEM is a licensee of Westinghouse Electric Corp. and Tappan Stove Co.

It manufactures room air conditioners, household refrigerators, washing machines, gas ranges, and flat irons.

These products are similar to those made in the United States with necessary design changes to adapt them to Mexican fa-

cilities, market demands, etc., said Ulloa.

"Climate and operating conditions in certain areas of this country are more unfavorable than the worst for which American apparatus has been designed," he explained. "So we have to find some means of overcoming very high ambient temperature and humidity together with poor voltage regulation."

Another problem facing Mexican businessmen is the very high rates of bank interest on loans, he added. Some times it is difficult for people who want to buy to obtain credit.

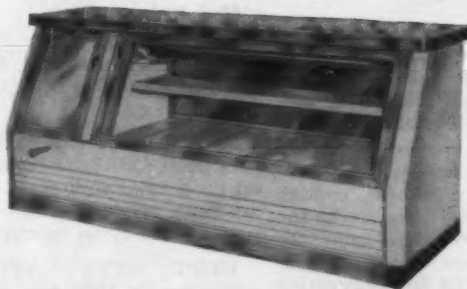
"Our relations with our parent companies in the U.S.A. have been very good and we have no complaints whatsoever," Ulloa said.



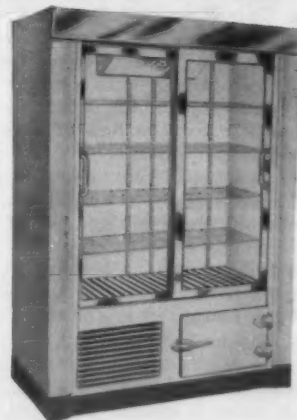
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Coldin's rocketing global distribution is based on the sound foundation of a superior product. Every Coldin commercial refrigerator is built to the highest specifications, designed in the concept of tomorrow — made to give everlasting satisfaction.

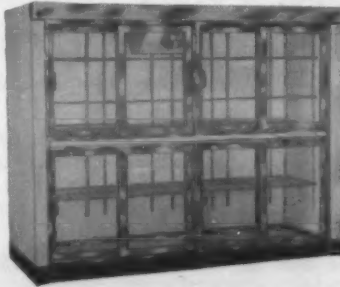
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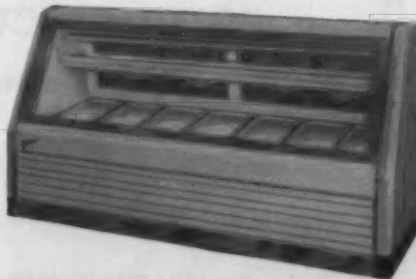
BV545C



BW8



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2800 Webster Avenue New York 58, N. Y.

Cable Address: Colcabinet, N. Y.

Ansul Moisture Control System Used Abroad

MARINETTE, Wis. — A wide acceptance for its refrigeration moisture control system has been built up overseas, claims Ansul Chemical Co.

Used by refrigeration servicemen in Europe, the Far East,

and other leading world markets, the system also is gaining acceptance with foreign original equipment manufacturers.

Ansul's most recent refrigeration distributorship has been established in India.

50-Cycle Equipment

NEWS Survey Digs Out Manufacturers of Cooling Equipment Designed for Use on 50, Odd Cycle Current

DETROIT — "When is 50-cycle not 50-cycle?" That is the question.

The answer? Depends on who's talking—some American manufacturers or their foreign customers.

Customer Complaints

From abroad comes the flat charge, "No American firm has yet produced a compressor that is originally designed to work to maximum efficiency on 50-cycle frequency."

Or again, "Reduction in capacity of 60-cycle hermetics on our 50-cycle power is against our use of American products."

The problem is one of reduced capacity due to the fact that motors operate slower on 50-cycle power than on 60-cycle. And that's the rub—60-cycle motors will operate on 50-cycle power.

This leads many American manufacturers to label their compressors and condensing units as 50-60-cycle, a designation which angers foreign customers.

To help foreign subscribers, the News attempted a fast survey of American air conditioning equipment and compressor manufacturers to find out who makes "genuine" 50-cycle equipment.

Manufacturers Replies

Manufacturers, it seems, have their problems too.

As pointed out by American Coils Co., Farmingdale, N. J., "In order to get full capacity at 50-cycle, you would have to build a compressor with a larger bore and stroke in order to compensate for the loss of displacement per minute."

In practice, the company recommends 50-cycle wound fan motors, so "the same amount of air is moved as with 60-cycle." Then they change pulley size to compensate for one sixth capacity reduction in motor r.p.m.

Tecumseh Products Co., Tecumseh, Mich., lists two compressors a 1 hp. and a 1½ hp., which show a special bore and stroke and a different displacement than their 60-cycle counterparts.

Remington Corp., Auburn, N. Y., lists three 50-cycle window units "which will not operate on 60-cycle frequencies." Indeed,

Remington believes that only it and Carrier Corp. produce genuine 50-cycle window units.

Trane Co., La Crosse, Wis., emphasizes that "regardless of whether you take a 60-cycle window unit operating on 50-cycles, or a 50-cycle specially built window unit, the capacity of the unit on 50-cycles will be five sixths the capacity of the same machine operating on 60 cycles. This is true since motors operate inherently slower on 50-cycle.

"Speed of a motor depends on the number of poles in the motor and frequency. Standard U. S. motors are either four-pole, 50-cycle, 1,425 r.p.m., or four-pole, 60-cycle, 1,750 r.p.m."

Units can be modified to operate on 50-cycle by providing 60-cycle electrical accessories. "On approval of the motor manufacturer, we can supply special transformers so units can become specially modified 50-cycle machines," the company said.

On central station equipment, genuine 50-cycle motors are supplied.

Frigidaire Div. of General Motors Corp., lists ratings for three 220-volt, 50-cycle window units, and General Air Conditioning Corp., Los Angeles, states that all their models and sizes can be supplied in 50-cycle on special order.

How About 50-Cycle Ratings?

Some foreign sources indicate that a minimum step in the right direction might be the simple task of publishing ratings for 50/60-cycle units—at both frequencies.

The feeling seems to be that, while it is a simple enough thing to calculate five sixths the rating of a 60-cycle unit, too much literature allows the inference that the 60-cycle rating applies at 50-cycle.

Following are summaries of information received by the News in response to a direct request for data on 50-cycle equipment.

AIRTEMP Div., Chrysler Corp., feels that "the percentage of 50-cycle units sold through exports does not warrant added expense of tooling, approvals, and engineering time to develop a complete line of

units for this market."

BENDIX - WESTINGHOUSE will build 50-cycle equipment on special order.

BRUNNER Div. of Dunham-Bush, Inc., offers serviceable hermetics for single-phase, 220-volt, and three-phase, 220 and 380-volt—all in 50-cycle. Motor compressors from ¼ through 7½-hp., air-cooled condensing units through 5-hp., and water-cooled condensing units through 7½-hp. are also listed.

On open-type equipment, Brunner lists compressors from ¼ through 100-hp. and an assortment of air and water-cooled condensing units.

DUNHAM - BUSH supplies special voltage and special cycle equipment in varying tonnages on items such as unit coolers, package chillers, cooling towers, evaporative condensers, water chillers, and unit heaters.

CARRIER CORP. offers room units, ice cube makers, condensing units, compressors (including hermetic centrifugals from 150-500 tons), absorption units to 500 tons. Single and three-phase equipment in 230 and 380 volts.

COOLERATOR Div., McGraw-Edison Co. states that all other frequencies than 60-cycle are manufactured on a custom basis.

FEDDERS - QUIGAN CORP. lists two 50-cycle window units—at 1 and 1½ hp.

FRIGIDAIRE Div., General Motors, lists three 50-cycle units rated at 7,600, 9,500, and 12,500 B.t.u.h.

GENERAL AIR CONDITIONING CORP. indicates that all its normal equipment—package and remote units—can be made to 50-cycle specifications.

HUPP INTERNATIONAL will offer in 1959 two 50-cycle units rated at 10,000 and 13,500 B.t.u.

KAUFFMAN AIR CONDITIONING CO. also will build units to any electrical specification.

MCQUAY, INC. produces all models of its unit coolers and product freezers and air conditioners to 50-cycle specifications on special order.

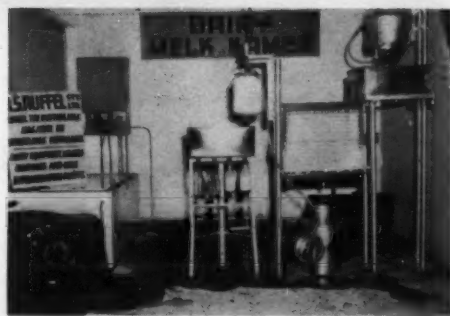
MELCHIOR, ARMSTRONG,

Brunner at Witwatersrand



BANKS Refrigeration Service demonstrates use of Brunner equipment to refrigerate counter display and storage for freezer foods at the agricultural and industrial exhibition claimed to be the third largest annual exhibition in the world. It draws about half a million visitors.

AT THE Easter Witwatersrand show in Johannesburg, Union of South Africa, Brunner equipment was used for milk cooling in the A. S. Ruffel, Ltd., "typical farm installation" exhibit (r.).



DESSAU CO. of DEL., INC. lists compressors through ¾ hp., self-contained belt-driven condensing units in ¼, ½, and ¾ hp., remote air-cooled condensing units through 3 hp., and remote water-cooled condensing units through 7½ hp.

REMINGTON CORP. offers three air conditioners at 1, 1½, and 1¾ hp.

TECUMSEH PRODUCTS CO. lists two compressors, with special bore and stroke, for 50-cycle operation—1 and 1½ hp. at 230 volts.

TRANE CO. will modify regular 60-cycle units with 50-cycle electrical accessories. In larger central station equipment, Trane will supply 50-cycle on order.

TYPHOON AIR CONDITIONING CO., INC. lists four models of open-type units from 10 through 25 tons in 5-ton increments.

UTILITY APPLIANCE CORP. is making 40-cycle equipment on order. Fifty-cycle evaporative air coolers are available, and the company will build 50-cycle equipment on order.

WARREN WEBSTER & CO. states that its air conditioners "operate at full efficiency on a 50-cycle current."

WELBILT CORP. list 50-cycle air conditioners for 115, 208, and 230 volts, at B.t.u. ratings from 5,500 to 12,700.

WESTINGHOUSE ELECTRIC CORP., AIR CONDITIONING DIV., offers packaged air conditioners from 3 through 15

tons; condensing units from 2 through 7½ tons; remote condensers in 3, 5, and 7½ tons.

WESTINGHOUSE ELECTRIC CORP., ELECTRIC APPLIANCE DIV., lists two 230-volt window units as "pure" 50-cycle equipment.

WHITEHALL ENGINEERING CO. offers a direct current 115/230-volt air conditioner in addition to a 115-volt and a 220-volt, 50-cycle conditioner.

WORTHINGTON CORP. lists commercial package air conditioners water cooled, rated from 3 through 15 tons; air-cooled package air conditioners from 3 through 7½ tons; remote conditioners with water cooled or evaporative condensers in 15, 20, and 25 ton. Units use "a hermetic motor-compressor which will operate at full efficiency on 50-cycle current."

Venezuelan Asks More Anti-Corrosive Paint on Coolers

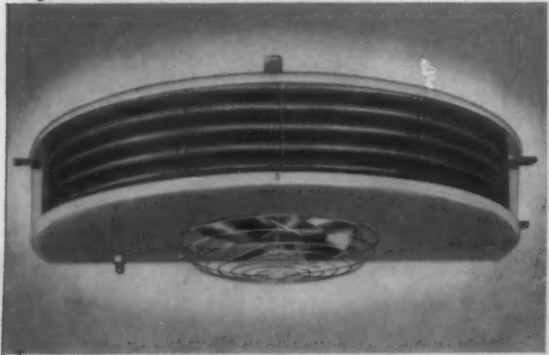
MARACAIBO, Venezuela—A suggestion that American manufacturers use some anti-corrosive paint on their air conditioners and refrigerators comes from Rupert Lynch, practical first class mechanic in refrigeration and air conditioning for the Shell Oil Co. of Venezuela.

In most cases, he related, air conditioners begin to rust within six months here and all must be repainted in less than two years.

Lynch said that he is constantly being asked by customers which American air conditioner is made of the best material. Biggest problem he has in complaints about the type of materials in units Venezuela has been getting.

Lynch reported that Shell of Venezuela is currently installing a great many air conditioning units. Most are from Dutch manufacturers, a few from English firms, and some from the United States.

new from KRACK...semi-circular unit cooler



Exclusive circuiting system prevents coil "frost-up"

- Electrostatic air filter on air intake.
- Mounts against wall for more usable storage room.
- Semi-circular discharge gives more even air circulation.
- Has full size built-in heat exchanger.
- Easier to install—suction and liquid line can be taken from either side of the unit.
- Drain pan is hinged for easy access to motor and expansion valve.



New BULLETIN SC-957 gives complete data... write or 'phone today!

KRACK REFRIGERATION APPLIANCES, INC.

Only Krack's 25 years of engineering and production experience makes such cooling values possible.

901 W. Lake St., Chicago 7, Ill.
MCNroe 6-1141

For Your Reprint Copy

"Emergency Diagnosis, Repair of Hermetic Unit Electric Components," by John L. Zant, mail this ad with your name and address to: Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich.
Only 25¢ each.



FLEET OF 12 MOTOR SCOOTERS carry Turning uniformed servicemen to answer a consumer complaint "almost before you can replace the telephone receiver." The crew of 25 rotate 14 hours a day, seven days a week.

Installations Within 6 Hours

Service Is Key To Quadrupled Business By Fedders New Hong Kong Distributor

HONG KONG—One of the most service conscious distributors of Fedders air conditioners, either in the United States or abroad, is in Hong Kong.

Here, H. W. Turning & Co., Ltd., located on Pedder St., has more than quadrupled Fedders sales for this area over the performance of the previous distributor since it was franchised last January.

The key to the Turning operation lies with its service de-

partment. The liberal service policies of the company—staggering to the imaginations of service managers for United States firms—have made Hong Kong one of the top five export markets for Fedders, according to Harlan Grosshans, export manager.

The Turning service department has as its backbone a fleet of 12 motor scooters manned by 25 trained mechanics. These motor scooters operate 14 hours a day, seven days a week.

According to A. Hall, Turning manager, the motor scootered mechanics are able to answer a service call within a matter of minutes—or as they advertise "almost before you replace the telephone receiver."

On an average summer day, the mechanics respond to from 120 to 150 calls to service the appliances that Turning distributes. These men will handle a major mechanical breakdown or even change a blown fuse.

Hall reports that the scooters, painted black and white, are well known around Hong Kong streets. All service personnel wear uniforms with a distinguishing emblem clearly visible.

"The constant appearance of these scooters helps to create a picture in the public's mind that the firm is being operated along the lines of a utility and therefore is extremely reliable," said Hall. "The publicity value alone has long ago repaid the original investment in the vehicles."

Turning gives to each Fedders purchaser an impressive warranty certificate that grants the standard five-year warranty on the hermetic system and one year on other parts.

A year of free service is also provided to the new Fedders owner. During this year, a member of the Turning service department makes a monthly visit to clean the filter and give the unit a general checkup. Also, there is no charge for any call requested by the consumer.

Included in the sale price of the air conditioner is free installation in either a window or wall. All installations are made within six hours after the purchase of the unit.

A Turning advertisement notes that an inspection of the installation and a demonstration of the unit will be made by "our sales executive (not just a salesman)."

Shipments From Ranco Plants In Italy, Scotland Growing; Expansion Predicted

COLUMBUS, Ohio—Although net sales and earnings of Ranco Inc. for the quarter ended June 30 evidenced the depressed and highly competitive conditions in the United States, shipments from plants in Scotland and Italy continued to grow, the company reports.

This favorable trend in sales will require further expansion of our manufacturing facilities abroad, the firm declared.

Consolidated net sales for the quarter amounted to \$6,508,570 as compared with \$7,826,773 in the same quarter of 1957. For the first nine months of the fiscal year consolidated sales were \$20,096,910, down from \$23,942,351 a year ago.

Consolidated net earnings for the quarter were \$445,433 as

compared with \$682,461 last year.

For three quarters they were \$1,300,990 as against \$2,113,898 in 1957.

Directors declared a 30-cent dividend per share of common stock payable Sept. 26 to holders of record Sept. 12.

Arkla Names Sillcox

NEW YORK CITY—Sillcox International Corp. here has been appointed world-wide distributor of products manufactured by Arkla Air Conditioning Corp. and will now operate as its export department.

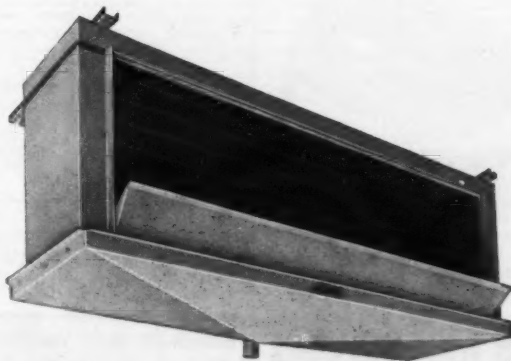
Arkla manufactures the "All-Year Sun Valley" gas air conditioners and water chillers, according to the announcement.

German Directories, Manuals Available For Distribution

NEW YORK CITY—An up-to-date set of German industrial manuals and trade directories has been assembled for distribution in this country, it was announced by the German-American Trade Promotion office here.

The manuals, printed in the German language, cover such fields as German corporations, large German enterprises, stock exchanges, machinery manufacturers, breweries, prominent business personalities, trade associations, etc., designed to provide valuable information for the American businessman dealing with Germany.

The volumes are available from Nordeman Publishing Co., Inc., Suite 2615, Empire State building, New York City 1.



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OF AIR
CONDITIONING UNITS
OUTSIDE THE U.S.A.

Contract Form Devised by Ft. Worth Group Spells Out Liabilities, Terms of Payment

(Concluded from Page 1)

ditioning installations, he added. The contract form, including a set of 14 terms and conditions printed on the back, was worked out by a special committee of the association following many hours of studying such forms, Texas laws, and the Fort Worth city plumbing and air conditioning code.

Form itself is printed in quadruplicate on 8½ by 11-in. sheets with the terms and conditions on the back of each copy. It is intended that the top copy go to the contractor's "lock up" file, second copy to buyer, third copy to salesman, and fourth copy to contractor's contract file.

Top of the form carries the insignia of the association and the words "Member Fort Worth Air Conditioning Association." Space is provided above the latter for printing of the firm's name, address, etc., which is done through special arrangement with F. L. Motheral Co., local printer and lithographer.

It is expected that this contract form will be used as the final page in a proposal.

In using the form the association committee suggests that the contractor type in reference to the firm's service warranty under the description of machinery and materials to be

FOOT WORTH
A C P

MEMBER FORT WORTH AIR CONDITIONING ASSOCIATION

TO: (HEREINAFTER CALLED THE BUYER) BILLING ADDRESS

FOR: (HEREINAFTER CALLED THE SELLER) COUNTY: LOT NO.: BLOCK NO.: ADDITION:

NOTE: This contract is subject to terms and conditions printed on reverse side of this page and which are made a part thereof.

HEREINAFTER CALLED SELLER, PROPOSES TO FURNISH MACHINERY AND MATERIALS ACCORDING TO THE FOLLOWING SPECIFICATIONS:

SHIPPING INSTRUCTIONS:

MACHINERY - TO MATERIALS TO BE READY FOR: ABOUT: DATE FROM DATE

OF APPROVAL OF THIS CONTRACT BY THE SELLER. DELIVERY TO BE MADE F.O.B. THE

BUYER AGREES TO PAY SELLER FOR SAID MACHINERY AND MATERIALS THE SUM OF: DOLLARS: (\$) AS FOLLOWS:

ALL PAYMENTS ARE TO BE MADE TO THE SELLER AT ITS OFFICE.

THIS CONTRACT SHALL NOT BE BINDING UNTIL DULY ACCEPTED BY THE SELLER AND SUCH ACCEPTANCE IS SUBSCRIBED HEREIN-BELOW, AND THE ACCEPTED COPY OF THE ORDER IS DELIVERED TO BUYER. THE BUYER UNDERSTANDS THAT HIS PERSON HAS AUTHORITY TO MAKE OR CLAIM ANY REPRESENTATION, WARRANTY, TERM, PROMISE OR CONDITION EXPRESSED OR IMPLIED WHICH IS NOT CONTAINED HEREIN.

DATE: ACCEPTED: (BUYER) BY: RESPECTFULLY SUBMITTED: BY: APPROVED BY: 19: BY: TITLE:

STANDARD form of contract that all its members can use was developed by Fort Worth Air Conditioning Association. Printed in quadruplicate on 8½ by 11-in. sheets, form also lists 14 terms and conditions (see text) on back.

When The Line Voltage Measures

Above Normal

or

Below Normal

Install an ACME ELECTRIC
Buck and Boost Transformer

• Air conditioning equipment cannot function properly if connected to a supply circuit that is substantially below or in excess of the normal rating of the motor.

An air conditioning unit with a motor designed for 230 volts operation will lose torque, overheat or cycle off-and-on if operated from a circuit below the nameplate rating.

A Buck and Boost transformer connected to a 208 volt circuit and adjusted for a 10% boost will supply 228.8 volts which is entirely satisfactory for 230 volt motor operation.

If operated on excessively high voltage the motor will run hot, windings char and finally burn-out and the cost of consumed electric current will be higher than necessary.

To correct undervoltage or overvoltage conditions — install an Acme Electric Buck and Boost transformer. Write for catalog.



ACME ELECTRIC CORPORATION
928 WATER STREET CUBA, NEW YORK

Acme Electric
TRANSFORMERS

furnished. Full details of the warranty may be written in the space or a copy of the service warranty attached.

The matter of payment and collections was also studied by the committee, which found considerable variation in policy among contractors, including firms with no set policy whatever.

As a result, the committee recommends that the contract be worded that payments are tied in with the three city inspections required by the Fort Worth code: (1) upon finish of rough-in ductwork, (2) upon setting of equipment, and (3) upon finish of installation.

Suggestion is that contractors specify payment of 30% or 40% upon rough-in, 60% or 50% upon setting of equipment, and 10% upon final okay by the city inspector.

The term "upon completion" should not be used in specifying terms of payment, the committee urges.

Text of the 14 terms and conditions printed on the back of the contract is as follows:

Terms and Conditions

1. Seller warrants against defects in material or workmanship all equipment furnished herein, as follows: Equipment furnished by Seller hereunder carries only the same warranty to Buyer as Seller received from manufacturer. The foregoing constitutes Seller's sole liability on warranty or otherwise arising out of the design, manufacture, sale, installation, operation or use of equipment sold, supplied and/or installed hereunder. In no event shall claim for consequential damages be made by third party; nor shall Seller's liability in any event exceed the cost of correcting defects in equipment as aforesaid.

2. Any material and work to that required hereunder or in plans and specifications that may be made a part hereof, will be paid for by Buyer as extra.

3. Unless stated specifically to the contrary herein, Buyer at his own risk is to prepare the premises and provide proper size openings sufficient for free movement and installation of materials, openings in the walls, floors and ceilings for all air ducts and pipes; and install where required and in accordance with local codes, the following: lighting; water, sewer and drain connections; steam supply and exhaust connections; cutting and patching; foundations and structural supports; electric wiring; and obtain all permits, certificates of inspection and pay the fees therefor.

4. If the equipment furnished hereunder requires use of water or steam, recirculated or otherwise, Seller shall not be liable for the effect of its physical or chemical properties upon said equipment.

5. On arrival of equipment at the premises described on the reverse side hereof, Buyer shall assume all risks of loss or damage to such equipment; and shall cause same to be insured against loss or damage in an amount sufficient to protect the interest of the Seller. Cost of insurance to be paid by Buyer.

6. When installation of the equipment herein is required specifically as a part of this order, such installation work shall be performed only during usual working hours unless otherwise stated herein.

7. All Guarantees, if any, that may be expressly stipulated on the reverse side hereof or in plans and specifications that may be made a part hereof, shall remain in force until opportunity for demonstration, but in no event longer than one year from date of shipment. If demonstration is required, full opportunity for test under requisite conditions will be furnished. Lack of such opportunity shall not be cause for deviation from terms of payment, and all such Guarantees shall be unenforceable during any period of time that Buyer may be in default of payment, or shall fail to fulfill any obligation hereunder. Prior to and during such demonstration, Buyer will furnish all necessary power, water, refrigerant, oil, waste, light, etc.; and also an employee of Buyer is to be instructed in the care and operation of the equipment. On the completion of the operating demonstration, the equipment shall be deemed to have met all such Guarantees and to have been accepted by Buyer, unless Buyer notifies Seller in writing, at Seller's office in Fort Worth within ten (10) days after the completion of the operating demonstration that the equipment fails to meet such Guarantees, and specifies in what particular it fails. Thereafter, Seller shall have a reasonable time to make necessary repairs and adjustments. If the equipment then fails to fulfill such Guarantees, Seller may remove the equipment upon refunding all moneys paid therefor, and thereafter no liability whatsoever shall exist in favor of either party against the other, and this contract shall thereupon be terminated.

8. In event Buyer requires Seller to delay shipment or completion of the work under this order, or the demonstration referred to in Condition 7, payment for the equipment shall not be withheld or relayed on such account. Seller shall have the right to deliver any portion of the materials to be furnished hereunder and to bill Buyer therefor, and Buyer agrees to pay for the same in accordance with the terms of payment hereof upon notification that such shipment is ready for delivery, notwithstanding the fact that Buyer may be unable to receive or provide suitable storage space for any such partial delivery. In such event, such portion of materials

ready for shipment may be stored by Seller at Buyer's risk and expense. 9. Until all payments due hereunder have been made in cash, Buyer shall keep said equipment free of all taxes and encumbrances, and without the written consent of Seller shall not remove the same from the premises or transfer any interest therein or in this order. 10. Any price or prices herein set forth shall be increased in an amount or amounts equal to the tax or taxes which may be assessed on the equipment supplied hereunder, or which may be due or become due from Seller, or which Seller may be required to pay with respect to this transaction, as the result of any excise, sales, use, occupation or similar tax now in effect or hereafter imposed by the United States, or any Federal, State, or local governmental authority. Any such increased amount shall be payable to Seller not later than the day the tax is payable by the Seller to the taxing authority. 11. Seller shall not be liable for any loss, damage or delay caused by fire, strike, labor trouble, regulations or priorities of civil or military authorities, insurrection, action of the elements, riot, transportation difficulties, or delays or similar cause reasonably beyond its control. 12. Seller agrees to pay social security taxes and to provide Workmen's Compensation Insurance in connection with its employees, and to provide public liability insurance in the amounts of \$25,000 and \$50,000, and property damage insurance in the amount of \$5,000. Should Buyer desire that Seller carry additional insurance, Seller will do so provided Buyer demands same in writing and pays the cost thereof as an extra. Seller will furnish insurance certificates upon request. 13. All skilled or common labor which may be furnished by the Buyer shall be considered and treated as Buyer's own employees, and the Buyer agrees to fully protect and indemnify the Seller against all claims for accidents or injuries to such employees in the course of the work, or to any person or persons through the negligence or alleged negligence of such employees. 14. CHATTEL MORTGAGE AND/OR LIEN ON MACHINERY SITUATED ON REALTY. Title to the equipment remains in Seller until payment of the entire purchase price and all sums due Seller under this order are fully made in cash. All equipment, whether affixed to the realty so as to become part thereof or not, shall remain personal property and be deemed without injury to the freehold. Buyer shall do whatever may be required to maintain Seller's title. On default of any payment or failure to perform any term or condition of this order, or in event that a proceeding in bankruptcy or insolvency be instituted against Buyer, or if equipment be misused, illegally used, wasted or imperiled, then at Seller's option the entire unpaid balance shall become immediately due and payable and in such case Buyer agrees to deliver said equipment to Seller at Fort Worth and if Buyer fails to do so, Seller may, without notice or demand, enter the premises and retake, remove and hold or resell the equipment or any part thereof at public or private sale; and if the unpaid balance plus interest is not satisfied by the net proceeds of such sale after deducting the expenses of retaking, repairs necessary to place the equipment in saleable condition, storing, taxes, liens, attorney's and collection agency's fees and other necessary expenses in connection therewith, Buyer shall pay any deficiency as liquidated damages for breach of this contract.

WHAT... WHEN... WHERE

Oil-Heat Institute of America Directors Meeting
Sept. 3-5, The Homestead, Hot Springs, Va.

National Institute of Locker & Freezer Provisioners
Convention and Exhibit
Sept. 21-24, Hotel Sherman, Chicago.

Refrigeration & Air Conditioning Contractors Association
Convention
Oct. 12-15, Broadmoor hotel, Colorado Springs, Colo.

Air-Conditioning & Refrigeration Wholesalers Meeting
Oct. 22-24, Sheraton-Palace, San Francisco.

National Electrical Manufacturers Association Meeting
Nov. 10-14, Traymore hotel, Atlantic City, N. J.

National Commercial Refrigerator Sales Association
Convention
Nov. 17-19, Golden Gate hotel, Miami Beach, Fla.

American Society of Refrigerating Engineers Meeting
Dec. 1-3, Roosevelt hotel, New Orleans.

National Warm Air Heating & Air Conditioning Association
Convention
Dec. 1-4, Cleveland.



M. NAKAGAWA (center), chief executive director of Toyo-Carrier Engineering Co., Ltd., Japanese subsidiary of Carrier Corp., visits the company's headquarters in Syracuse. Accompanying the visitor on a tour of the production facilities was Winston Braxton (left), assistant general manager, and Ralph Bedford, Far East senior representative of the International Div. of Carrier.

Cooling In Japan

Industrial, Commercial, Residential Markets Prosper as Nation Rebuilds

SYRACUSE, N. Y.—Japan, whose air conditioning history is nearly as old as the industry itself, today holds the position of being one of the top cooling markets outside of the United States.

Industrial air conditioning is one of the most advanced markets in Japan according to Toyo-Carrier Engineering Co., Ltd., Carrier subsidiary in Tokyo. Every textile mill has air conditioning.

Toyo-Carrier's history almost parallels that of Japanese air conditioning itself.

The Carrier affiliate air conditioned the world's first train for the Manchurian Railways in 1934, the first cargo-passenger ship, the Koan Maru in 1932, and the first theatre in 1933.

Among the impressive installations of Toyo-Carrier are the Imperial Palace; the prime minister's official residence; the Japanese Life Insurance building; Tokyo University hospital; Japan Telegraph & Telephone Co.; Reader's Digest building; Takashimaya Department Store in Tokyo; and buildings of the Toyo-Rayon Mills.

SOME MORE RECENT INSTALLATIONS

Some of the more recent installations include the imposing second annex to the already air conditioned Imperial hotel (the first also was cooled by Toyo-Carrier) and the Japan Atomic Energy Research Institute.

Modern day Japan, whose climate is similar to that of Wash-

ington, D. C., boasts air conditioning in every walk of life. All new major buildings have cooling, and air conditioning is prevalent in stores, restaurants, and theatres.

M. Nakagawa, chairman of board of Toyo-Carrier, says a buying spree which began in post war years is still sweeping the islands and air conditioning for the home is high on the list of consumer demand.

Winston Braxton, assistant general manager of the International Div. of Carrier, says that the market for air conditioning presents a bright future.

MARINE COOLING

Marine air conditioning is a vital part of Toyo-Carrier activities. Much of this work is in ocean-going tankers to provide comfort in crew's quarters.

The general commercial market is strong now and will be the leading factor in the near future, but development of home air conditioning presents a real opportunity long range.

Nakagawa sees the rapid population growth in Japan as offering the greatest promise for Japan's economic growth. Tokyo currently is bulging with over eight million people and other cities like Osaka and Yokohama are teeming with increased numbers, many from the rural areas of Japan.

He says the fast pace in Japan today is indicative of his country's drive to regain its place as a leading world economic center.

Argentine Officials Discourage Purchase of Foreign Products To Promote Licensing of Local Firms

BUENOS AIRES, Argentina—Argentine financial authorities won't allow the purchase of refrigeration or air conditioning products made abroad when they can be made locally, reports Hugo Naun Pagliere, refrigeration and air conditioning parts wholesaler here.

For some years now, he said, government authorities have been devoting efforts toward stimulating local production.

"We are trying to make contact with manufacturers in the United States of leading makes of refrigeration and air conditioning equipment who might be interested in discussing with us the possibility of setting up production under license in this country," he declared.

"Ample facilities would be

available for the manufacture of refrigeration and air conditioning parts.

"There is no limit to opportunities for future progress here for home refrigerators, commercial refrigeration, and air conditioning of all types."

While not importing anything at the moment, Pagliere claims a leading position among wholesalers of refrigeration and air conditioning parts and supplies.

"We sell our materials to the majority of contractors and retailers making installations and undertaking service and maintenance of commercial and domestic refrigeration and air conditioning equipment all over the country."

For them, Pagliere put out an annual catalog of 130 pages.

Venezuela's Been Booming for 3 Years

1958 May See \$5.5 Million In U.S. Refrigeration, Air Conditioning Equipment Pour Into Restless Country

CARACAS, Venezuela—Even with two revolutions and still some minor political difficulties yet to be settled, an estimate of \$5.5 million for 1958 is not too far out of line for American exports of air conditioning and refrigeration equipment to Venezuela, believes William Schlapfer, chief engineer for Emca Tecnica C.A.

"The Venezuelan market has been booming for three years," he relates, "and trying to keep up with all new projects is just too great a load for one sales outlet or air conditioning contractor."

Emca Tecnica C.A., importer of air conditioning products from the United States, Germany, and England as well as local contractor, is growing with the industry and with the economy of the country.

NATURAL NEED FOR COOLING CITED

Schlapfer said, "There is a natural need for air conditioning in all the low, flat parts of this country, where oil wells and iron mines are."

"Caracas, which is at 3,000 ft. altitude, has, during the last three to four years, increased its need for air conditioning, not only because of the gradual upturn in ambient temperatures, but also because so much construction is now and will continue to go up. This creates dust and noise problems which air conditioning can nicely take care of."

BUILDING POSITIONED TO GET NO DIRECT SUN

"There is one case of a large 11-story building here that the architects with models and many months of study as to sun positions came up with a position of the entire building in which no direct sun ever shone into the building."

"Cross ventilation was the only manner of making it comfortable. Large walls are of the open louver type."

"Eight years ago, this was an ideal solution and was adequate for the client. However, recently with a new super highway being planned close by and a warmer outdoor temperature, management is now considering air conditioning of this building."

"It is fortunate that the architects had foresight and provided high corridors which can be utilized for ducts and outlets."

Schlapfer said that there is no residential air conditioning sales volume to speak of as yet. "But this, too, is expanding and should be considerable after all large offices and new buildings have had air conditioning installed," he believes.

"Oil companies have started this trend in their company owned houses. As time goes on it will be the next great market to cover here in Venezuela."

Emca Tecnica represents Worthington Corp.; Clarage Fan Co. through Ameraseco, Inc. of Montclair, N. J.; Coolerator Div., McGraw-Edison Co. through Silcox International

Corp. of New York City; Economy Pumps Div., C. H. Wheeler Mfg. Co.; and Universal Mfg. Co.

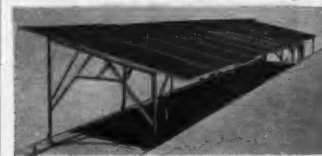
It also imports all kinds of air conditioning and refrigeration material either through jobbers or agents such as

Harry Alter of New York City or H. L. McMurphy of Miami. It does the same directly from such manufacturers as Dunham-Bush, Minneapolis-Honeywell, Marley, Binks, American Air Filter, Pittsburgh Corning, and many others.

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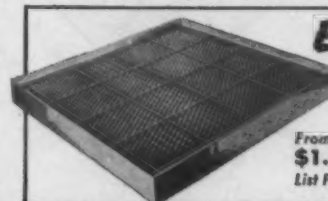
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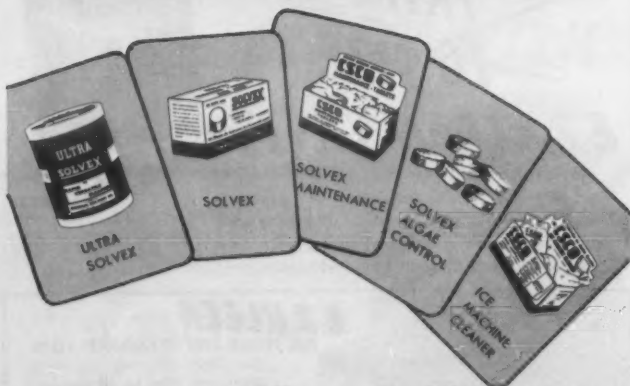
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'Clean Room' Controls Conditions Beyond
Surgical Requirements for Missile Output

PITTSBURGH—An industrial air conditioned "clean room" for processing precision valves and parts for the missile ground support program has recently been placed in operation at Superior Valve & Fittings Co. here.

In this glass-enclosed working chamber, the atmosphere is controlled beyond the strict requirements of surgical operating rooms.

Factors precision controlled are temperature, moisture, dust, atmospheric pressure, vibration, illumination, ventilation, and noise.

George R. Allen, Superior vice president, explains that "Microscopic cleanliness of valves and parts in the fuel systems of missiles (these are for use in the Thor IRBM project), is essential.

Smallest Particle May
Result In Malfunction

"The automatic control valves in a missile are so sensitive that even the smallest particles of foreign material can cause improper operation of the controls and possible malfunction of the missile.

"Because of the super-cleanliness requirements, Superior built special cleaning, assembling, and testing facilities within this "clean room" in cooperation with the Douglas Aircraft Co. for whom we are a subcontractor."

A 2-ton, 2-hp. air conditioning unit in parallel with electric strip heaters, keeps the temperature at an absolute 69° F. Humidity is maintained at 50%.

2-Ounce Positive
Pressure Maintained

A positive pressure of two ounces is held to insure an outward flow of air when the doors of the "clean room" are opened. A "Trion" electrostatic unit is employed as the filtering agent—there is no dust.

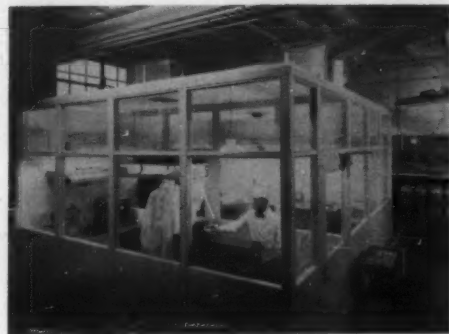
The air conditioning unit is oversized three or four times for the 16 by 16-ft. dimensions of the room, Allen said. This overage is necessary to keep the room at an even temperature under all conditions presented in the cleaning operation.

The air conditioning unit, electrostatic filter, and all ductwork are located on the roof of the chamber. All cooling, heating, cleaning and filtering are tied into a common ductwork that respond as one to the master control panel within the room.

The area outside the room is not air conditioned.

"After normal production cleaning and de-greasing," Allen related, "all parts for valves are channeled to the 'clean room' where they are immersed in an ultrasonic trichlorethylene bath.

"In this ultrasonic tank, the 38,000 cycle per second vibration induced into the cleaning fluid through a crystal controlled transducer, overcomes the forces of adhesion which binds extremely small particles to the valve parts. This process



SUPERIOR'S "clean room" is totally enclosed, complete with electrostatic air filters, air conditioning and humidity control equipment, ultrasonic cleaners, and specially designed inspection and test facilities. Here a trained operator uses the two-way communication box which minimizes entry and exit to and from the "clean room."

cess removes 96% of the particles down to 1 micron size. (A dust particle 25 microns in size would measure only one 1,000th of an inch.)

Operators Wear
Lint Free Garments

"Although the air in the 'clean room' is recycled 10 times an hour through the electrostatic filter, the specially trained operators must wear rubber overshoes, lint-free garments, head coverings, and special gloves.

"All materials are handled in stainless steel or polyethylene containers. All test and assembly fixtures, hand tools, and material handling equipment are washed daily with isopropyl alcohol.

"As the final test, all cleaned parts are reinspected under an ultraviolet 'black light.' This black light inspection is the final proof that parts are clean since even trace quantities of hydrocarbons show up under the scrutiny of the black light.

"The cleaned and inspected valves are assembled and tested at pressures up to 4,160 p.s.i. on

special test benches. Once approved, completed valves are capped and plugged with ultrasonically cleaned plastic caps, then sealed in polyethylene bags.

"The special room is in constant use, and we have found the air conditioning, filtering, and moisture control equipment is performing beyond our critical expectations," he concluded.

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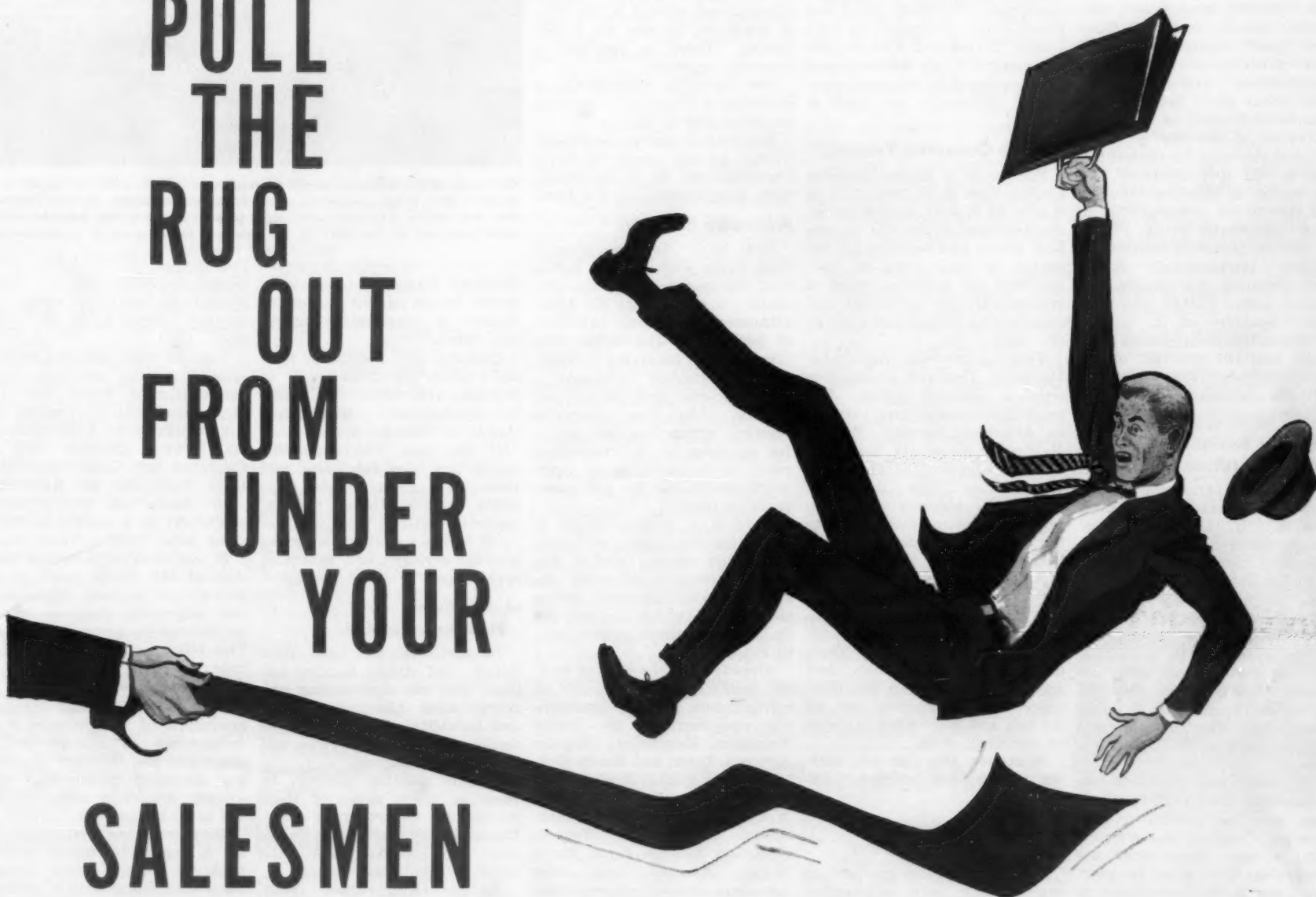
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World Wide Market Awaits U.S. Wooing--

(Continued from Page 1, Col. 5)

since the times of Genghis Khan and Mohammed. What's with this tractor bit? And as for air conditioning—another plaything for the sultan and his harem, maybe?

Automobiles? Don't be ridiculous. What's wrong with elephants, camels, oxcarts? They were good enough for their great-great-great-great-great grandfathers; and the great-great-great-great-great grandsons weren't about to change.

Nowadays, however, an international yearning for modernization is rife and rampant. All the world is yeasting—hungry and thirsty for powered aids to more comfortable living.

Political problems involved in today's international unrest have obscured this simple, elemental fact. Astute exporters aren't unaware of it, though. To them, it's the greatest challenge, and the greatest opportunity, they've ever seen. If only the politicians don't mess up things. . . .

'Look for Business Where Business Is'

It's an old (and wise) axiom to "look for business where business is." If intensity of consumer desire is any indicator, America's best business prospects lie abroad—in the awakening nations across the seas.

Those manufacturers who already pitch woo to foreign buyers find them to be exceedingly profitable customers. Licensing arrangements can be quite rewarding, also, in countries which restrict imports because they lack foreign exchange.

(If they can't sell to us, because of our tariff barriers, they have no dollars to buy from us. Congress please note.)

To be sure, many small nations in out-lying areas are poor, and have chronic shortages of any kind of money. Their poverty, however, often is offset by the comparative wealth of those countries into which we are pouring American "foreign aid" dollars by the shipload.

Moreover, the United States IS a huge importer of raw materials—the greatest—from those nations fortunate enough to have stuff we need.

Private American citizens also invest enormous amounts of capital annually in sound countries like Australia, Canada, Brazil, South Africa, Venezuela, etc.

Why Not Get Dollars Back?

And, to repeat, the American government hands out billions of dollars abroad every year in our continuing foreign aid programs. These billions of dollars come out of our personal and corporate income taxes. Why not get some of these dollars back into our own coffers, honestly and usefully all around?

By "all around" we mean: cultivating the export trade is mutually beneficial—to our industry, to our nation, and to all those countries with which we do business.

Our refrigeration and air conditioning industry is in a singularly able position to climb on this bandwagon. Incomparably

the U.S.A. is the most advanced nation on Earth (technologically and productionwise) in terms of nearly all applications of refrigeration and air conditioning.

Thanks to the enormous North American domestic market, air conditioning and refrigeration equipment—including parts and pieces—manufactured in the United States and Canada can be marketed at lower prices than equivalents produced elsewhere. Moreover, our stuff is reliable.

Service: Groaning Tragedy

Service is a bigger problem abroad than it is here, bad as it may be in your neighborhood. An American citizen has no idea how lonely and helpless an importer or user feels in, say, Bangkok or Karachi, when a commercial or industrial air conditioning installation goes on the blink.

That's a groaning tragedy for the user. He's out of business until it operates again. The product's manufacturer—whether American, German, British, Italian, or Swiss—is thousands of miles distant. Likewise, his technicians. Thus, a service failure also becomes a personal problem of magnified morbidity for the importer, because he is held responsible.

Right there, in this arena of service, is where German, British, Italian, and Danish manufacturers are stealing a march on us in some places. Their products may cost more, and may not work as well, but their export representatives are on the ball and there when it comes to servicing them.

Moreover, they provide service information in many languages.

European Competitors Moving Into Vacuum

Hence, European competitors are moving into a vacuum caused by American manufacturer's neglect during the last dozen years. (That neglect is understandable—until recently we've been too busy filling orders at home.) Some of these enterprising foreign competitors are inroading into markets which we've taken for granted too long.

All we have to do to regain our pre-eminent position as top exporter of refrigeration and air conditioning to the world, however, is recognize the problem, and woo the market intelligently.

That said market is opening up exciting new vistas for world traders became quite evident to this writer on his recent around-the-world tour of subscribers.

Hawaii: Tremendous

Take Hawaii, which should become the 50th State soon. This sexboat combination of concubinal climate and clustering commerce—loveliest spot on the globe—has tremendous untapped buying power for the good things provided by our industry.

It is prosperously growing, and will continue to grow into the brightening future. Moreover, it is a great market for our products. Hawaii, for example, imports most of its

food, and is just catching onto the frozen packaged variety. Commercial refrigeration, home freezers, and the like have enormous potential here.

And believe it or not, this place with the finest all-year climate on earth, with temperatures almost always in the 70's, is beginning to like air conditioning. There is, you see, a humidity problem.

The Hawaiian Electric Co., a progressive utility, is promoting air conditioning heavily.

Reluctantly leaving salubrious Hawaii, as they say in the movie travelogs, we fly to Australia. Now, here is the real Big Deal.

Australia: Big Deal

Not since America erupted from virgin wilderness to industrial dominance during the 19th century has this dizzy old world witnessed such an explosion of production, population, and promise as is occurring in lusty, gusty "Australya" nowadays.

Immigrants and capital are pouring into this enormous country, which has lain fallow for so long, at a tremendous rate. It is enjoying a boom which should last for a hundred years or more.

Here is a nation, larger in area than the U.S.A., with only 10 million people; and it has natural resources of every description, awaiting more people and capital (which are arriving daily in significant quantities) to exploit them.

Already it is the second largest producer and consumer of refrigeration and air conditioning equipment in the world. Frigidaire, Kelvinator, Chrysler Airtemp, Tyler, and Bundy Tubing have plants down there. Westinghouse, Temprite, York, Worthington, Dunham-Bush, Marley, Hussmann, Tenney, Creamery Package, Koch, Marlo, Norge, Admiral, and other American makes are manufactured under license.

Any American refrigeration or air conditioning firm which isn't represented down there is missing a real good ride on the best gravy train in the world today.

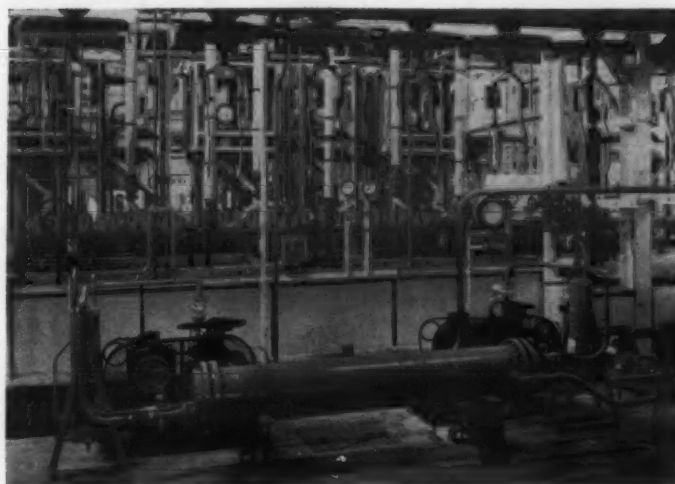
(Aside: Not long ago the writer discussed this imagination-stirring situation with Phil O'Connell, topside Bundy Tubing executive, who had visited Bundy's subsidiary in Australia shortly before we arrived. "Phil," the writer jollied, "if we were 10 years younger, I'd recommend that we go back down there right now and get rich." O'Connell's rejoinder: "What have our birthdays got to do with it? I'm game to pack a bag tonight.")

Singapore: Rich, Juicy

Singapore—crossroads of the world—comprises the most advanced market for air conditioning to be found anywhere. It's rich, juicy, and colorful.

Air conditioning isn't seasonal there. It operates 52 weeks a year. Terrific around-the-clock service organizations, plenty of local wealth waiting to be siphoned—desire for U.S.A. products—what a market! Flying onward. . . .

Every place he lights in Indonesia and Malaya through



FRIGIDAIRE REFRIGERATION controls the temperature of the acid etch, copper, and chromium tanks in two new plating plants of Vauxhall Motors Ltd. in Luton, England. Seen here are two 5-hp. units operating in conjunction with a shell and tube cooler which cools one of the tanks on the chromium plating plant to a temperature between 100° F. and 105° F.

Thailand, Pakistan, India, Iran, Saudi Arabia, and Lebanon to Turkey, a globetrotter knows he's "abroad."

Customs and costumes, food and toilet facilities are so strange—and sometimes tough to accommodate—that, well, this is travelin' for sure.

If the man who runs this course has been vaccinated and inoculated against typhus, typhoid, yellow fever, cholera, malaria, beri-beri, and whatnot . . . if he has a cast iron-stomach plus the curiosity of a dedicated archeologist . . . well and good.

Middle East: Heat Insufferable

Because we can say this: Asiatic and Middle Eastern nations need air conditioning and refrigeration the most. Heat and humidity are almost insufferable by North American and European standards.

Despite relative poverty, by hook or crook many of these nations are importing air conditioning at fancy prices. It's a real good market now, and could be limitlessly better.

As for refrigeration: fresh-killed meat spoils within hours, unless chilled. Frozen foods (packaged) are almost unknown in many places, but would be quite a boon. Few homes or food shops have refrigeration of any variety.

Thailand and Pakistan particularly are progressive nations—eager to consume our industry's products. Likewise, India, Lebanon (yes, Lebanon!), and Turkey. Their chief difficulty is lack of dollars plus import restrictions. U. S. capital investment in local factories—or licensing arrangements—could pay off well in this region.

Europe: Prosperous

Comes up now Europe. Thanks to healthy billion-dollar infusions of American "aid"—plus that present-day phenomenon of world-wide personal desires for upgrading living standards—Europe is much more prosperous than some foreign correspondents of American newspapers would have you believe.

France, Belgium, Italy, Denmark—and especially England and Germany—are in excellent shape financially, compared to almost any period in their previous long histories.

Nowadays these peoples are progressive, commercially and industrially, instead of retro-

gressively traditional in their aspirations and consumption—as they tended to be 20 years ago.

They've made amazing recoveries from the wreckage and devastation of World War II. More important to readers of AIR CONDITIONING & REFRIGERATION NEWS, suddenly they've forgotten how Grandfather the Duke lived, and are installing such boons as refrigeration equipment at a rapidly accelerating rate.

If you've been following this *Around the World in 50 Days* series, you've seen interesting and impressive figures—nation by nation—to prove this point. The refrigeration boom in Europe isn't likely to bust for three generations.

To be sure, American-licensed producers of compressors and components in Europe sometimes feel like they are competing amongst themselves, and against American exporters of the same things, too.

And even the importers of U. S. products which aren't made in Europe under license have complaints (about service information and facilities, chiefly).

At Last! A Market!

Big point is: at last there's a competitive market for cooling devices of all sorts—instead of an apathetic attitude born of tradition—in Europe, as well as all around the world.

Recently released yearnings for a fuller life, on the part of uprooted peoples everywhere, have triggered this opportunity-for-traders situation.

No longer must our industry's products be sold abroad by beating-your-head-against-a-wall methods. Now they are wanted by people who are eager to acquire and use them. Eloquent testimony to that fact can be found in many other articles—based on reports by subscribers—throughout this issue.

It's a new deal all around, and a great promise for U.S.A. exporters and licensors.

Everywhere on this *Around the World in 50 Days* jaunt the writer met subscribers who were anxious to get their names into AIR CONDITIONING & REFRIGERATION NEWS, and have their problems aired vis-a-vis their American suppliers.

This can be regarded as a tip-off. These importers and (Concluded on next page)

(Concluded from preceding page) licensees have been doing a good job despite our indifference toward, and neglect of, their problems. They could do a much better job if we paid more attention to our world trade opportunities.

Their markets provide vast potentialities for American suppliers, most of whom haven't begun to treat them with the respect and detailed attention they deserve.

Relatively, many of these importing nations are more prosperous right now than we are, and they can provide us with a springboard to jump out of our slump.

Truly, a trifling amount of extra effort devoted to the export business can lift the American air conditioning and refrigeration business into new heights of activity and prosperity for decades to come.

Incidentally, the News has loyal subscribers in 40 nations, including Russia. Although we have no reports on activities of U.S.S.R. subscribers, here are their names, in case you are interested in new pen-pals:

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Auto Cooling Continues Rapid Growth--

(Concluded from Page 1, Col. 2) increase over its figure for last year.

Last week, in New York City, Rootes Motors, offered its first batch of 200 Hillman Minx economy English cars with optional air conditioning and sold out immediately.

The AACMA, meeting in Dallas recently, agreed that the industry has now reached the age of maturity.

"It is now recognized," declared Gordon, "that the independent manufacturer is here to stay and that there is little conflict with the automobile manufacturer with regard to air conditioning."

"The replacement market in the automotive field has always been a large business. It is now evident that automobile air conditioning is on a solid foundation and will continue to grow rapidly."

MORE STABLE PRICES

All companies represented at the meeting emphasized that operating policies will be more closely administered during the coming year. Prices will be more stabilized and service facilities expanded.

One observer pointed out that independent manufacturers collectively have more service points available to the public, through its many distributor and dealer outlets, than any similar product.

Members of AACMA include A.R.A. Mfg. Co. and Clardy Auto Air Conditioning Co. of Fort Worth, Texas; Capitol Refrigeration Mfg. Co., Climatic Air, Frigikar Corp., John E. Mitchel Co. (Mark IV Div.),

Parkomat Mfg. Co., and Tex-Aire Mfg. Co. of Dallas; Forston Co. of Houston; Cartrol Corp. of Kansas City, Mo.; International Automotive Air Conditioning of Fort Lauderdale, Fla.; Mobil-Aire Mfg. Co. of Dennison, Texas; and O. A. Sutton Co. of Wichita, Kan.

William E. Anglin of Capitol is secretary and William E. Lind of Frigikar is treasurer.

SALES CLIMBING

The Times found that despite the sharp decline in automobile sales, automotive air conditioning sales continued to climb.

General Motors Corp. reported that one out of every three Cadillacs produced this year is air conditioned. The same proportion applies to Chrysler's Imperial.

Clare Briggs, vice president of Chrysler Corp., said, "All indications are that 5% of all new cars this year will be equipped with air conditioning."

During the first four months of 1958, 2.2% of Plymouth cars, 3.5% of Dodges, 6.2% of DeSotos, and 10.3% of Chryslers were air conditioned. In each case, this represented an increase over last year.

Air conditioning installations on Chevrolets are up 50% over last year while on Buick, Oldsmobile, and Pontiac, increases of 8 to 10% were noted.

Sid Shapiro, refrigeration products sales manager for Tenney Engineering, Inc., which supplies components for auto air conditioners, indicated that Frigiquip, Inc. expects a 65% gain over last year, Capital Refrigeration a 25% gain, and Parkomat, Inc. a 20% gain.

Los Angeles Committee Studies Ammonia Provisions of Code

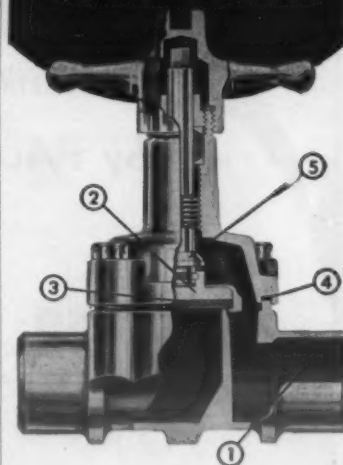
LOS ANGELES—Code provisions on ammonia will be checked over at a meeting of the refrigeration code advisory committee for the City of Los Angeles on Aug. 4.

During the year just past the committee meetings have thoroughly discussed every part of the code and comparatively minor changes were suggested.

No particularly significant changes regarding ammonia had been recommended by the committee, but the Aug. 4 meeting will go thoroughly into safety provisions in connection with ammonia use, according to Arthur G. Clark, chairman of the refrigeration advisory committee.

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Kansas Dairy Act 'Unconstitutional' --

(Concluded from Page 1, Col. 5) wholesalers, and distributors in Kansas of selling below cost and in the subsidization of retail dealers through secret discounts, gifts, loans, and other means and the furnishing of equipment, adversely affect the stable economy of Kansas. Such trade conduct causes unfair price discrimination, destructive and predatory trade practices . . . and misleads the public as to the true value of dairy products, and is detrimental to the public health and welfare. . . .

"It shall be unlawful for any person engaged in business . . . to do or cause to be done any of the following acts:

"Furnish, give, rent, lease, or lend to a retail dealer or consumer any money, equipment, fixtures, ice cream cabinets . . . or other things having a real or

substantial value, or any expendable supplies commonly provided in connection with sales of dairy products to the consumer (except that he may sell dairy products), except that it shall be lawful to lend or rent ice cream cabinets . . . for periods of not to exceed ten days in any one period of six consecutive months. . . ."

In ruling on the Act, Judge Johnson said:

"The law is unconstitutional in that it is violative of the constitutional provision for equal protection of the law and due process."

More than a year ago a similar measure banning traditional equipment practices in North Dakota was outlawed, the ARI pointed out.

The institute also noted that in December 1956, the Nebraska Dairy Industries Association opposed a suggestion that its members initiate steps to introduce the Equipment Ownership Act, which would have barred the loan of cabinets, fixtures, and other essential accessories by ice cream producers to retail outlets.

The Nebraska plan would have made it mandatory for ice cream makers to sell cabinets and other equipment under spelled-out terms, among other things.

(Concluded from Page 1, Col. 5) ceived its Silver Shield operating license at the dinner meeting from George Boeddener, who is managing director of NWAHACA.

To qualify for a Silver Shield, a system must be installed according to the National Warm Air manuals, its design must be approved in advance, and it is subject to inspection upon completion. Further, the local bureau guarantees that any shortcomings in a Silver Shield system will be made good by the bureau.

Three different Silver Shield labels are available to provide for summer, winter, or winter-summer air conditioning.

First year's goal here is 475 Silver Shield installations, according to Lewis Andrus, president of the comfort bureau.

These would represent an additional \$250,000 over the cost of the average system, Andrus declared at the meeting, obviously aiming this remark at the bankers present.

Promotional efforts of the Kalamazoo group will be largely concentrated on newspaper advertising back up by some radio and television. First full-page ad in the campaign appeared in the July 26 issue of the Kalamazoo Gazette.

It is expected that expenses of the entire program will be financed by the charges for each Silver Shield, which will prob-

ably be established at \$10 by the Kalamazoo group.

Contractors don't have to belong to the comfort bureau to install Silver Shield systems, but such jobs have to meet all the requirements and the non-member contractor pays the same price for the shield as member contractors.

Charter members of the bureau are Andrus Heating, C. Bartholomew, DaHaan Heating, Nelson Fox Heating, Guernsey & Jones Warm Air Heating Co., Kalamazoo Mechanical Service Co., Wm. V. Metzger & Son, Glen W. Rybrand Co., S & N Heating Co., Schipper's Service Appliance, Donald R. Snyder, and L. E. Tassell Co.

Athens White Cross Clinic Conditioned

UTICA, N. Y.—The White Cross Clinic in Athens, recently air conditioned by A. Livanios, is believed to be the first air conditioned clinic or hospital in Greece, according to Remington Corp. here.

Livanios is Remington distributor in Athens.

Remington window units were installed throughout the Regent Palace hotel in Baghdad, Iraq by the firm's local distributor, Badi Amin Zaki of Iraq Heating and Air Conditioning Co.

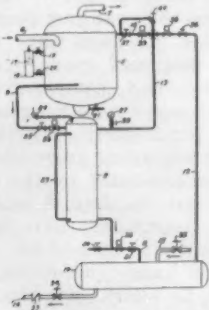
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PATENTS

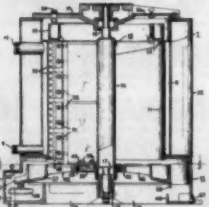
Week of June 3
(Concluded)

2,836,968. LIQUID REFRIGERANT TRANSFER SYSTEM. Erich J. Kocher, Milwaukee, and Joseph H. Long and Francis T. Pallanch, Wauwatosa, Wis., assignors to The Vilter Mfg. Co., Milwaukee, Wis.



1. In a liquid refrigerant transfer system adapted for cooperation with a refrigerant circulating compressor communicable with the low pressure discharge and with the high pressure refrigerant supply lines of an evaporator. . . .

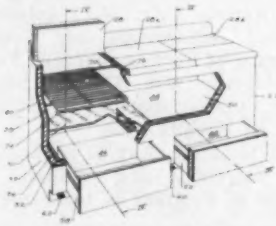
2,836,967. FLAKE ICE MAKING APPARATUS. Erich J. Kocher, Milwaukee, Wis., assignor to The Vilter Mfg. Co., Milwaukee, Wis.



1. A flake ice making machine comprising, a refrigerated jacket having an inner annular freezing surface, a rotor revolvable within said jacket, a plurality of knives carried by said rotor and having the cutting edges thereof movable along said freezing

surface, means for distributing water over said freezing surface remote from the cutting zone. . . .

2,836,968. REFRIGERATOR WITH FLURAL REFRIGERATED COMPARTMENTS. Edward A. Ferris, Utica, N. Y.



7. A custom kitchen cabinet refrigerator of the character described comprising a low, substantially flat top oblong frame portion having insulated bottom and side walls and open top; a plurality of refrigerated compartments disposed in said frame portion including a first compartment accessible through said open top, a second compartment separated from said first by a non-insulated solid partition and a third compartment separated from said first and second by thickly insulated partitions. . . .

2,837,019. AIR OUTLET DEVICE FOR VENTILATING APPARATUS. Elliot Godes, Manchester, Conn., assignor to Anemostat Corp. of America, New York.

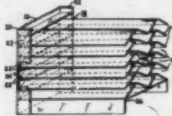


1. An air outlet device having rear and front ends and comprising a first portion including air passageway defining means extending between said ends and formed to cause supply air flowing forwardly therethrough to be deflected in one direction from the front end of the device and a second portion including air passageway defining means extending between said ends and formed to cause supply air flowing forwardly therethrough to be deflected in a different direction from the front end of the device. . . .

Editor's Note: Patents described here have been selected from the "Official Gazette" of the United States Patent Office. They offer only a brief summary of each invention. In some instances only the first part of the digest is presented.

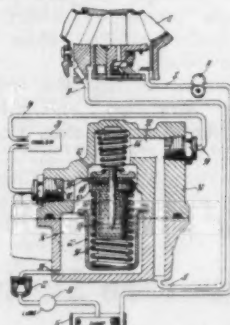
Printed copies of patents, reissued patents, and patent designs may be secured from the Patent Office; patents and reissues are 25¢ each, while designs are furnished at 10¢ each. Address orders to: Commissioner of Patents, Washington 25, D.C.

2,837,171. GAS DEHYDRATOR. Erich J. Kocher, Milwaukee, Wis., assignor to The Vilter Mfg. Co., Milwaukee, Wis.



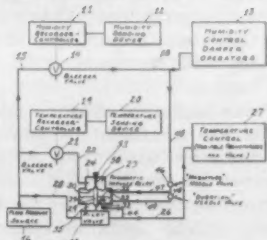
2. A gas dehydrator comprising, a series of longitudinally corrugated plates cooperating to form undulated open passages extending transversely through the series, a pair of members each having a web extending across but spaced from the adjacent extreme ends of said plates and also having flanges at its opposite sides extending toward the other member and coacting with the adjacent side edges of said plates at the ends of said passages to prevent lateral displacement of the plates. . . .

2,837,285. THERMOSTATIC AND PRESSURE RESPONSIVE CONTROL VALVE. Harry E. Urban, Oak Park, Mich., assignor to General Motors Corp., Detroit, Mich.



1. A temperature and pressure-responsive control including in combination a chamber through which liquid can flow from a principal inlet to a principal outlet, an auxiliary inlet passage communicating with the chamber adjacent the principal inlet, an auxiliary inlet passage communicating with the chamber at a point separated from the principal inlet and the auxiliary outlet passage. . . .

2,837,286. TEMPERATURE AND HUMIDITY CONTROL SYSTEM. Hugh N. Ross, Silver Spring, Md., assignor to American Instrument Co., Inc., Silver Spring, Md.



1. In a humidity and temperature control system, humidity-sensing means, humidity-modifying means, means controllably connecting said humidity-sensing means to said humidity-modifying means, temperature-sensitive means, temperature-modifying means, means controllably connecting said temperature-sensitive means to said temperature-modifying means. . . .

Thinking of—

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- expanding your territory
- taking on new lines—

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CLASSIFIED ADS

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German Water Shortage

Cooling Sales Rise Seen Resulting from Conversion To Air Cooled Equipment

RAVENSBURG, West Germany—Despite Germany's moderate climate, officials of Escher Wyss, G.m.B.H., manufacturer of air conditioning and refrigeration equipment here, believe that more and more air conditioning will be installed in public buildings.

"This trend will be favored by the fact that the water supply in our country is getting

(Editor George F. Taubeneck describes West Germany's rapid recovery from the war on page 6 of this issue.)

more and more difficult. Water-cooled systems used so far will have to be replaced to a considerable extent by mechanical refrigeration."

They look for this market to open up in public rooms, concert halls, theaters, cinemas, and hospitals.

Escher Wyss imports Tecumseh compressors from the United States primarily for its household and commercial refrigeration products.

It manufactures in its Lindau works refrigerating plants for butchers, slaughter houses, dairies, and warehouses; freezing plants for communities; frozen food chests; low temperature refrigeration plants for bakery goods; cooling and air conditioning units for transport vehicles; air conditioning plants for all purposes; and automatic washing machines.

"Of great importance at present is the installation of freezing plants for rural communities (combined cabinet freezing plants)," Escher Wyss officials say.

"Business is good in this field and there will certainly pass several years before the market has been saturated to any extent."

Although the company does not manufacture domestic refrigerators, it notes that sales have increased very considerably during the last few years and it expects that trend to continue.

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POSITIONS WANTED

AVAILABLE — GRADUATE engineer with more than thirty years' experience in air conditioning, refrigeration, low temperature work—design, application, and sales. Interested in connection requiring top-notch ability and which appreciates know-how. Reputation excellent in industry. Will relocate. BOX A6073, Air Conditioning & Refrigeration News.

SALES MANAGER, wholesale—If you are looking for an experienced and successful sales manager, it will pay you to get the story on this man. He is able to assume full responsibility for a complete sales organization, including establishment of marketing programs; personnel recruitment and development; dealer development; advertising and sales promotion; and control of purchases and inventories leading to long-term growth in wholesale merchandising of packaged and applied air conditioning. University graduate, age 34, with stable family situation. Confidential resume available on request. BOX A6080, Air Conditioning & Refrigeration News.

POSITIONS AVAILABLE

WANTED REPRESENTATIVES calling on industries, laboratories, hospitals. Agents to sell standard line or custom built low and high temperature environmental equipment. Generous commissions. Select territories still open. Write stating experience, lines handled, territories traveled, etc. Reply BOX A6068, Air Conditioning & Refrigeration News.

HELP WANTED—A national manufacturer of air conditioning and heating requires district sales manager. Applicant should be well qualified to work with distributors and dealers. Some travel. All replies held in confidence. Reply to BOX A6072, Air Conditioning & Refrigeration News.

OUTSTANDING OPPORTUNITY for top-notch sales manager—Established Chicago manufacturer of popular, nationally advertised refrigerated and heated specialty products seeks a live-wire, hard-hitting sales manager. Extensive traveling required. Salary and liberal bonus arrangement. Write and tell us why you're our man. Outline previous experience and past earnings. Your reply will be held in strictest confidence. BOX A6077, Air Conditioning & Refrigeration News.

MANUFACTURERS' REPRESENTATIVES wanted to handle complete line of Perma-Fil filters including replaceable, activated carbon (aluminum frame), permanent (lifetime filter), pad (washable and electrostatic), activated carbon (pad) types. All filters fully guaranteed. Offer liberal commissions and cost sheet. PERMANENT FILTER SALES, 2202 Norfolk Avenue, Houston 6, Texas.

SALES OR design-engineer—commercial, industrial heating and air conditioning. Permanent position with progressive, leading wholesaler in Utah, Idaho, and Colorado, handling top manufacturers' lines. Salary and bonus program commensurate with ability. Profit sharing retirement program. Life, sickness, surgery and hospital insurance coverage. Liberal vacation and sick leave. Only experienced and well qualified men will be considered. Address BOX A6078, Air Conditioning & Refrigeration News.

EQUIPMENT WANTED

WANTED To buy. Used store and market equipment such as meat cases, dairy cases, produce cases, frozen food cases, walk-in-coolers, condensing units. Describe and give price on each item offered. Write BOX A6079, Air Conditioning & Refrigeration News.

EQUIPMENT FOR SALE

NOTICE: DISTRIBUTORS, dealers, service men, users refrigeration equipment—repair parts available all models Baker ammonia and Freon compressors. We are exclusive Baker export sales office. Manufacturers' export agents refrigeration, air conditioning, and allied equipment. THE KEISER COMPANY, Paul Building, Utica, New York.

SELECTIVE DEFROST timers. Has 24 hr. synchronous clock 42° cut in adjustable cap tube 28° nationally advertised make terminals. Closeout lots 10—\$1.60 ea. Lots 25—\$1.35 quantity discount. NATION WIDE, 3421 N.W. 48th St., Box 64, Miami, Fla.

MODEL HH 2 h.p. automobile air conditioning compressors tapered shaft, vertical mount, complete with flywheel \$35.95. Send for free circulars and catalogs on money saving refrigeration & air conditioning parts and supplies. WALTER W. STARR, 2933 Lincoln Ave., Chicago 13, Illinois.

PACKAGED WATER Chillers—1%, 2 and 3 h.p., air-cooled and water-cooled, 1 or 3 phase, O.E.M. prices. Write for specifications and prices, BOX A6065, Air Conditioning & Refrigeration News.

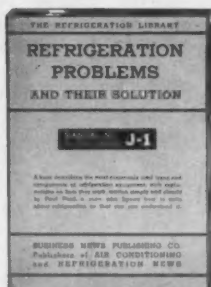
NEW 50 ton G. E. condensing unit, model #19CM124J681E. Unit consists of compressor, water cooled condenser, drive package, and suction and discharge valves. Unit is brand new and still in original crate. Make an offer. BOX A6076, Air Conditioning & Refrigeration News.

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Servicing Automobile Air Conditioners

(Vol. 2)
BY C. DALE MERICLE

FIG. 10—Schematic wiring diagram of 1956 Pontiac air conditioner.

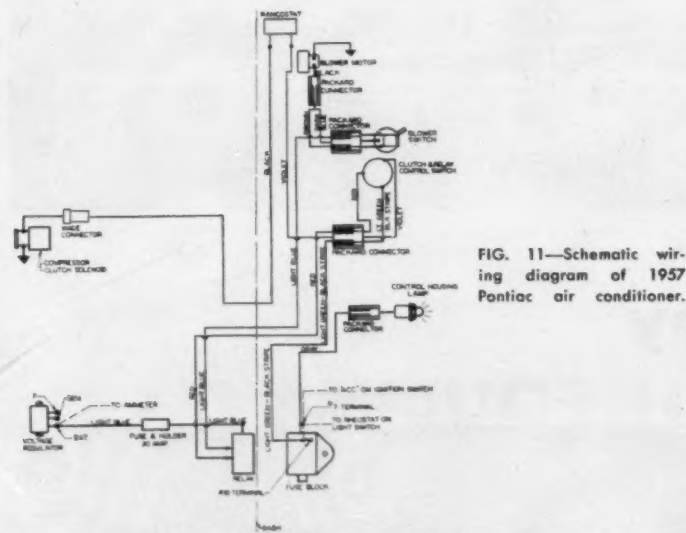
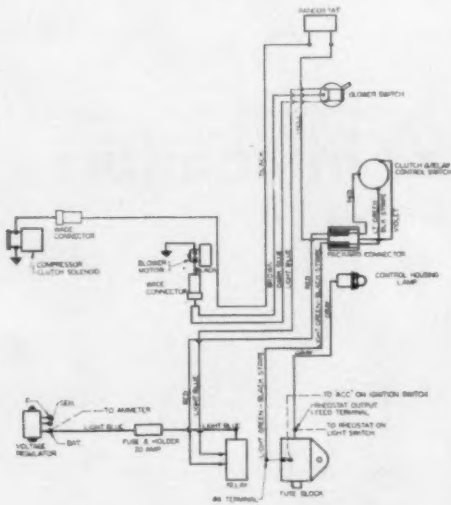


FIG. 11—Schematic wiring diagram of 1957 Pontiac air conditioner.

Operating Pressures and Temperatures For 1956 Pontiac

Ambient Temp. (°F.)	Head Pressure (p.s.i.g.)	Suction Pressure (p.s.i.g.)	Right Outlet Temp. (°F.)
70	120-140	23-29	35-39
80	138-172	24-30	36-40
90	161-209	24-32	37-42
100	190-250	26-34	39-45

Operating Pressures and Temperatures For 1957 Pontiac

Ambient Temp. (°F.)	R.H. (%)	Head Pressure (p.s.i.g.)	Suction Pressure (p.s.i.g.)	Right Outlet Temp. (°F.)
70	30-70	104-126	7-14	23-35
80	30-60	127-157	12-22	28-39
90	20-50	150-179	16-28	33-46
100	10-50	175-218	18-34	38-56

PONTIAC (2)

Pontiac Motor Div.
General Motors Corp.
Pontiac 11, Mich.

Wiring

Schematic wiring diagram of the 1956 Pontiac air conditioner is shown in Fig. 10.

Wiring diagram of the 1957 system is shown in Fig. 11.

SERVICE HINTS

Evacuating System

An automobile air conditioner must be evacuated following installation or opening of the system for repairs to remove air

Charging System

Pontiac systems are charged through the low side with Refrigerant-12 vapor in the usual manner.

Complete charge is 5 lbs. in 1956 systems, 4 1/4 to 4 1/2 lbs. in 1957 systems.

Operating Pressures, Temperatures, (1956)

Normal operating temperatures and pressures for the 1956 Pontiac air conditioner are given in the accompanying table.

Any substantial departure from the data given in the table will offer a clue in diagnosing service problems.

Test conditions require that the car be located in a garage where the sun load is not a factor and that an auxiliary fan be placed in front of the car radiator. The test is run with the hood raised, engine speed at 1,200 r.p.m., control lever placed at "Outside" position, and the blower switch in "High."

To prevent cycling of the compressor by the thermostat controlling the magnetic clutch, wire from the thermostat should be disconnected at the clutch and a jumper wire run directly from the clutch terminal to the battery positive terminal.

The system should be operated five minutes to permit temperatures and pressures to stabilize. The readings should be taken within the next five minutes, because continuous operation of the compressor at ambient temperatures below 100° F. is likely to cause icing of the coil.

Ambient temperature reading is taken a few inches in front of the condenser. Discharge air temperature is taken at right air outlet in car with thermometer bulb inserted 1 in. inside the outlet nozzle.

Operating Pressures, Temperatures (1957)

Check for normal operating temperatures and pressures on 1957 Pontiac units is made in same manner as on 1956 systems except that the temperature control lever is in extreme right position.

Note, however, that the data given in the table for 1957 Pontiac conditioners also takes into account variations in temperatures and pressures resulting from relative humidity as well as the ambient temperature. Ranges of the pressure and temperature readings correspond to the range in ambient relative humidity listed in the second column of the table.

(To Be Continued)

'56 Cuba Imports of Cooling Units Rise

WASHINGTON, D. C.—Sales of air conditioners and refrigerators in Cuba have increased at an accelerated pace in recent years, says a recent U. S. Bureau of Foreign Commerce report.

Imports of air conditioners of all types nearly doubled in 1956 over the 1955 figure, the total being 5,114 units in 1955 and 9,550 units in 1956. Imports of refrigerators in 1956 were up nearly 40% over 1955.

General prosperity of the country plus a jump in all types of construction are major factors in the sales increase.

Sales of air conditioners on the instalment plan, with up to 24 months to pay, are another factor said to be boosting sales.

Too Much Damage

Stronger Packaging, Complete List Of Parts Are Venezuela Needs

CARACAS, Venezuela — We have too much damage in shipments of room air conditioners. Better and stronger packaging is needed, asserts William Schlappfer, chief engineer for Emca Tecnica, C.A. here.

"Domestic packing has been used for all of our deliveries," he said. "In the past much of the damage resulted when wooden frames of the packing came apart. This has been solved somewhat by tying a steel strap around the crates. Now it seems that the wood used is weak and breaks very easily."

"To completely export-box these items is too costly and the only solution I can see for the manufacturer is to come up with better and stronger packaging."

"To be truthful, I am afraid most of the damage comes from loading and unloading of ships at dockside and therefore cannot be solved by the manufacturers."

Schlappfer also complained that complete spare parts lists are not sent overseas.

"This lack of knowing parts numbers and what to stock up for our service problems creates lengthy delays which local clients cannot tolerate," he declared.

"We actually make many items which we do not have

in stock in order to repair units which break down."

A campaign to eliminate reference to horsepower or tons of refrigeration should be undertaken by U. S. manufacturers in their window air conditioner advertising overseas, Schlappfer believes.

Only a few people have asked for our ratings based on B.t.u.h. capacity, he said. We feel this is only because these people have read American publications such as AIR CONDITIONING & REFRIGERATION NEWS, he added.

In packaged air conditioners, the big problem is getting 50 cycle equipment from manufacturers.

"Equipment designers, for the most part, forget completely about possible overseas markets and the problems of 50 cycle and odd voltage that occurs in other parts of the world," he asserted.

"Most manufacturers, with an export outlet, seem to feel that asking for 50 cycle units does not seem to be important."

"The domestic designers should always recognize that the equipment may go overseas and should have in mind the possible operation on different current characteristics than are found in the United States."

"Also, air-cooled equipment is a must for units up to 7 1/2 tons."

High Cost of Credit Balks Mexican Boom

MEXICO CITY, Mexico—The greatest need in Mexico to promote the sale of refrigerators is credit, declares Malcolm Niven of Cia. Mercantil Internacional, S.A. Money costs a minimum of 2% a month locally.

Mercantil Internacional sold Servel refrigerators here for many years. During the last few years, it manufactured the cabinet and imported the unit and accessories.

"After Servel suspended the manufacture of gas and kerosene refrigerators, we made

arrangements with Whirlpool Corp. to continue in this business," Niven said.

Commenting on the outlook generally, Niven said, "Since the population is increasing at a great rate and since Mexico has many resources, it is to be expected that there will be a great boom here."

"This will take place when the purchasing power of the people increases to the point where they can afford to buy the so-called luxury items such as refrigerators."

Kuwait Laughs At Max. Design Dry Bulb

AUBURN, N. Y.—There are a number of places in the world where the "accepted" maximum outdoor design dry bulb temperature just isn't high enough, and the kingdom of Kuwait, on the Persian Gulf, is one such place.

So says Herbert L. Laube, president of Remington Corp. here, firm which earlier this year filled an order for 1,500 specially designed 50-cycle heavy-duty air conditioners.

A five-year tabulation of Persian Gulf weather data

showed that the units would have to perform under the following conditions:

Maximum Shade Temperatures

Year	1943	1944	1945	1946	1947
Maximum	123	121	120	120	123

No. of Days at Following Temperatures

	1943	1944	1945	1946	1947
120° F.	4	1	2	1	2
116° F.	32	11	26	9	26
112° F.	62	60	71	22	77
108° F.	87	106	106	69	111
104° F.	120	137	132	113	140
100° F.	145	166	159	142	168

ARE you in need of a "just right" man to fill a slot in your organization—the man you are looking for will be reading the

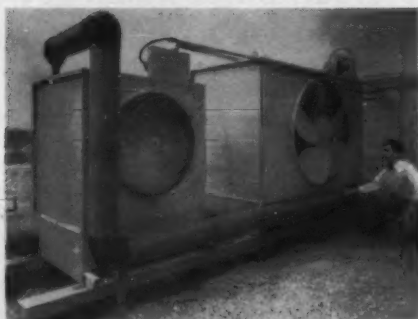
NEWS' CLASSIFIED ADS

On the new *Connecticut Turnpike*...



ARCHITECT • CONSULTING ENGINEER • CONTRACTORS FOR HEATING, AIR CONDITIONING & REFRIGERATION
Fred Dixon Wm. Carson Bay State York, Fred Ruff Co., Becker and Goldstein

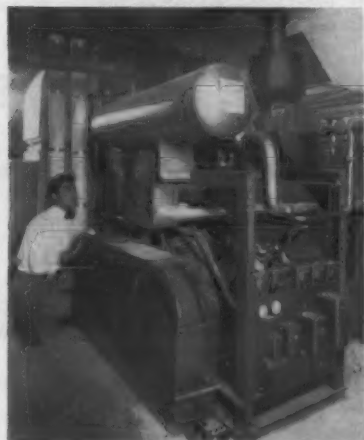
Comfort made possible by COMPACT DUNHAM-BUSH EQUIPMENT



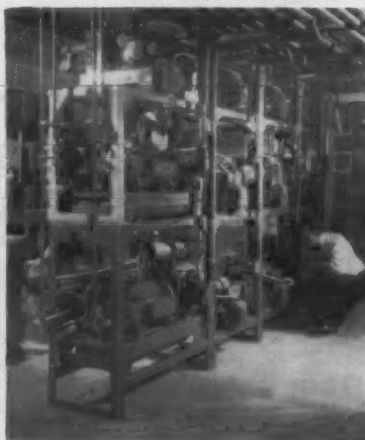
Rooftop installation of cooling tower and evaporative condenser



Low temp 'ED' electric defrost unit in walk-in cooler



'PC' 40 ton Heat-X package chiller for water chilling



Brunner-metic condensing units in rack assemblies

The matchless combination of engineered compact design and high performance efficiency—that's why Dunham-Bush was selected to serve the eight Savarin restaurants on the new Connecticut Thruway.

The single major problem at each of these eight locations was how to get maximum floor space to accommodate the many travelers, and yet have the kind of equipment necessary to insure complete customer comfort. A solution was sought . . . Dunham-Bush was selected.

Units of the following types are installed at each of the new eating places . . . for complete atmospheric comfort and proper food and drink conditioning: Packaged Water Chillers, Unit Coolers, Evaporative Condensers—all with patented Inner-Fin construction that permits compactness of design previously impossible; Air Handling units, Oil Separator Mufflers, and Rack Assembled Condensing units (for extra space-saving convenience).

Depend on Dunham-Bush, the single, compact organization that has the product depth, diversity, and experience to satisfy every demand for heating, air conditioning and refrigeration equipment.

Dunham-Bush, Inc.

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heat-x

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